

**TOXICOLOGICAL EVALUATION
OF FRESHWATER SEDIMENT SAMPLES**

FC 1640 LVR Toxicity Test

10 Day *Chironomus dilutus*
Survival and Growth Sediment Toxicity Test

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TABLE OF CONTENTS

1.0	INTRODUCTION	3
2.0	MATERIALS AND METHODS	3
2.1	General Methods, Biological Evaluations	3
2.2	Test Species	3
2.3	Test Samples and Laboratory Control Sediment	3
2.4	<i>Chironomus dilutus</i> Survival and Growth Toxicity Tests	4
2.5	Statistical Analysis	4
2.6	Quality Control	4
3.0	RESULTS AND DISCUSSION	5
3.1	Laboratory Control and Project Reference Site Performance	5
3.2	Protocol Deviations	6
3.3	Summary	6
4.0	REFERENCES	7

LIST OF TABLES

Table 1.	Summary of Sample Collection and Receipt Information	5
Table 2.	Reference Toxicant Evaluation	5
Table 3.	Summary of Acceptable Endpoints and Measurements	5
Table 4.	Summary of Project Reference Site Performance	6
Table 5.	Summary of Significant Endpoints	6
Table 6.	Survival Summary and Statistical Analysis	8
Table 7.	Ash Free Dry Weight Summary and Statistical Analysis	9
Table 8.	Ash Free Dry Biomass Summary and Statistical Analysis	10
Table 9.	Summary of Overlying Water Qualities	11
APPENDIX A:	RAW DATA AND STATISTICAL SUPPORT	12

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1.0 INTRODUCTION

This report presents the results of chronic exposure toxicity tests conducted on sediment samples collected for the FC 1640 LVR Toxicity Test. Samples were provided by Geosyntec Consultants, Chicago, Illinois. Testing was based on programs and protocols developed by the ASTM (2010) and US EPA (2000). The toxicity of the samples was assessed by conducting short term survival and growth tests using the freshwater midge, *Chironomus dilutus*. Toxicity tests and supporting analyses were performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire.

Toxicity tests expose groups of organisms to environmental samples, a laboratory control and field reference sites for a specified period to assess potential impacts on a variety of endpoints, such as survival, growth or reproduction. Analysis of variance techniques are used to determine the relative toxicity of the samples as compared to the laboratory control and/or field reference sites.

2.0 MATERIALS AND METHODS

2.1 General Methods, Biological Evaluations

Toxicological and analytical protocols used in this program follow procedures outlined in *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates* (ASTM Method E 1706-05, 2010), *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates* (US EPA 2000) and *Standard Methods for the Examination of Water and Wastewater*, 20th Edition (APHA 1998). These protocols provide standard approaches for physical and chemical analysis and for the evaluation of toxicological effects of sediments on aquatic invertebrates.

2.2 Test Species

The acute exposure assay was completed using *C. dilutus* obtained from Aquatic BioSystems, Inc., Fort Collins, Colorado. Midge larvae were between 8 and 10 days old and more than 50% were at the third instar stage.

2.3 Test Samples and Laboratory Control Sediment

Sediment samples collected for the FC 1640 LVR project were received at ESI under chain of custody. Once received, samples were inspected to determine integrity, given unique sample numbers and logged into the laboratory sample management database. Once logged in the samples were placed in a secure refrigerated, 2 - 4 °C, storage area. A listing of sample sites, sample collection, and receipt information is summarized in Table 1.

The control substrate was an artificial sediment prepared according to guidance presented in the EPA/ASTM method. Organic detritus from chironomid cultures and disintegrated paper pulp were used to provide organic content. Overlying water for the sediment toxicity tests was natural surface water, collected from the upper portion of the Taylor River watershed in Hampton Falls, New Hampshire. Use of natural surface water is recommended by the protocol (EPA 2000, ASTM 2010).

2.4 *Chironomus dilutus* Survival and Growth Toxicity Tests

Sediment was homogenized and then placed in test chambers. Overlying water was added immediately and then the chambers were allowed to stabilize. The chambers received two volume additions twice a day until organisms were added.

Test vessels were 400 mL glass beakers containing 100 mL of sediment and approximately 225 mL of overlying water. Test vessels were drilled at a consistent height above their bases and the hole covered with Nytex® screen. The screened hole facilitates water exchange while retaining test organisms. Vessels were maintained in a water bath during the test. Depth of the water in the bath was set below the drain hole in the test vessel to eliminate flow of water from the bath into the test vessel. Test chambers were randomly placed in the water bath after addition of test sediments. Placement locations were generated by the CETIS® software program. The randomization work sheets are included in the data appendix. The water bath was maintained in a limited access, temperature controlled room. Temperatures in the room and water bath were independently set at a temperature of 23°C. Temperature was recorded on an hourly frequency using a temperature logger placed in a surrogate vessel. The photoperiod in the test chamber was set at 16:8 hour light:dark. Lighting was supplied by cool white fluorescent bulbs. All test chambers were aerated throughout the assay and dissolved oxygen levels were maintained at 60% saturation or greater.

On day 0, larvae were randomly selected from the pool of organisms and added to test vessels. Each treatment group included 8 replicates with 10 organisms per replicate and a surrogate test chamber that was used to obtain water qualities during the assay without disturbing the test animals. The surrogate chamber was treated the same as actual test chambers with the addition of animals and food, but was not used to determine endpoint data.

Prior to the daily overlying water renewal, dissolved oxygen, pH, specific conductance and temperature were measured in the surrogate chamber for each treatment. Overlying water in each replicate was then renewed. The volume of water added to each test chamber was approximately two volume additions. Test chambers were also renewed again in the afternoon with another two volume additions. Water exchanges were facilitated by use of a distribution system designed to provide equal, regulated flow to each chamber. The system was activated manually by the addition of water during the assay. After the afternoon overlying water renewal each replicate was fed 1.0 mL of 6 g/L Tetramin® flake fish food suspension. Alkalinity, ammonia, and hardness of the overlying water were measured on days 0 and 10. Overlying water quality records are available in Appendix A.

After 10 days exposure, all replicates of each test treatment were terminated to collect data for survival and growth. Each test chamber was gently swirled to loosen the sediments and the test material was dumped on to an appropriately sized mesh screen. The sediments were washed through the sieve using freshwater and material left on the screen was sorted to recover the organisms. This process was continued until the entire sample was evaluated. Surviving larvae were placed on tared weighing pans; partially and fully emerged organisms were recorded in survival counts but not included in weight measurements. Pans were dried overnight at 104°C to obtain dry weight to the nearest 0.01 mg. The organisms were then fired in a muffle furnace for two hours at 550°C to obtain the ash free dry weight to the nearest 0.01 mg. The mean ash free dry weight of surviving organisms was determined to assess growth.

2.5 Statistical Analysis

Survival and growth data were analyzed using CETIS® software to determine significant differences between the test sediments and the reference site samples. Data sets were evaluated to determine normality of distribution and homogeneity of sample variance. Data sets were subsequently evaluated using the appropriate parametric or non-parametric Analysis of Variance (ANOVA) statistic. Pair-wise comparisons were made using the appropriate statistical evaluation. Statistical difference was evaluated at $\alpha=0.05$.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are completed on a regular basis for each test species. These results provide relative health and response data while allowing for comparison with historic data sets. Results are summarized in Table 2.

Table 1. Summary of Sample Collection and Receipt Information. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Field ID	Sample Designation	ESI Code	Sample Number	Sample Collected		Sample Received	
				Date	Time	Date	Time
OUI-SE-LVR609-110822	Reach 3	21319-001	001	08/22/11	1715	08/24/11	950
OUI-SE-LVR607-110822	Reach 3	21319-002	002	08/22/11	1649	08/24/11	950
OUI-SE-LVR608-110823	Reach 3	21319-003	003	08/23/11	900	08/24/11	950
OUI-SE-LVR604-110824	Reach 2	21319-004	004	08/24/11	1115	08/25/11	1115
OUI-SE-LVR605-110824	Reach 2	21319-005	005	08/24/11	1000	08/25/11	1115
OUI-SE-LVR606-110824	Reach 2	21319-006	006	08/24/11	1030	08/25/11	1115
OUI-SE-LVR610-110823	Reach 4	21319-007	007	08/23/11	1650	08/25/11	1115
OUI-SE-LVR611-110823	Reach 4	21319-008	008	08/23/11	1715	08/25/11	1115
OUI-SE-LVR612-110823	Reach 4	21319-009	009	08/23/11	1540	08/25/11	1115
OUI-SE-LVR602-110825	Reach 1	21319-010	010	08/25/11	900	08/26/11	930
OUI-SE-LVR603-110825	Reach 1	21319-011	011	08/25/11	820	08/26/11	930

Table 2. Reference Toxicant Evaluation. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Date	Endpoint	Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
<i>Chironomus dilutus</i>					
09/19/11	Survival	LC-50	1.52	4.07	0.0 - 9.19 Cadmium (mg/L)

3.0 RESULTS AND DISCUSSION

3.1 Laboratory Control and Project Reference Site Performance

At the end of the 10 day exposure period, mean survival in laboratory control sediment was 87.50% with a coefficient of variation (CV) of 13.31%. Larvae recovered from laboratory control sediment had a mean dry weight of 1.77 mg/larvae, with a CV of 24.14%. The dry weight of a representative group of larvae at the start of the assay was 0.063 mg/larvae. The minimum acceptable criteria for the laboratory control treatment is $\geq 70\%$ survival and a mean ash free dry weight (AFDW) of ≥ 0.48 mg/larvae. As the laboratory control treatment exceeded the minimum acceptability criteria for the assay the test organisms were determined to be healthy and unstressed and the overlying water was determined to have had no significant adverse impact on the outcome of the assay. These data are considered as valid for evaluating impacts associated with the sediment samples.

Temperature data collected during the daily water quality observations documented a mean value of 22.92°C with a range of 20.30 to 24.55°C . Confirmation temperature data collected in a surrogate replicate daily documented a mean temperature of 23.5°C with a range of 20.3 to 25.2°C . Test acceptability criteria requires a mean temperature of $23 \pm 1^{\circ}\text{C}$, with maximum temporary fluctuations of $23 \pm 3^{\circ}\text{C}$. Water quality data are summarized in Table 6 and provided in detail in Appendix A.

Table 3. Summary of Acceptable Endpoints and Measurements. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Endpoint / Measurement Protocol Criteria

Survival	lab mean \geq 70%	Mean Survival %	87.50
		Protocol Met	Yes
Mean Ash Free Dry Wt.	lab > 0.48 mg/larvae	(mg)	1.773
	Protocol Met	Protocol Met	Yes
Temperature	mean: $23^{\circ}\pm 1^{\circ}\text{C}$ minimum: 20°C maximum: 26°C	daily / hourly daily / hourly daily / hourly Protocol Met	22.92 / 23.5 20.30 / 20.3 24.55 / 25.2 Yes / Yes

Table 4. Summary of Project Reference Site Performance. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Field ID	ESI Code	Sample Number	Survival (%)		Growth - Weight (mg)		Growth - Biomass (mg)	
			Mean	CV	Mean	CV	Mean	CV
OUI-SE-LVR610-110823	21319-007	007	96.25%	5.38%	1.773	24.14%	1.672	21.69%
OUI-SE-LVR611-110823	21319-008	008	31.25%	112.70%	0.598	36.60%	0.389	54.69%
OUI-SE-LVR612-110823	21319-009	009	91.25%	9.15%	1.750	30.25%	1.620	35.47%

3.2 Protocol Deviations

Review of data generated during the 10-day exposure period documented one minor deviation. There were 3 test chambers that had more than 10 animals loaded at the start of the assay. It is the opinion of ESI's study director that this deviation did not adversely affect the outcome of the assay.

3.3 Summary

This program utilized protocols developed by the US EPA and ASTM to assess the potential toxicological impacts that exposure to FC 1640 LVR sediments would have on invertebrates. Table 5 provides a summary of demonstrated effects, based on comparisons between the laboratory control and the reference site sample. Tables 6 through 8 provide summaries of assay endpoints and detailed statistical results for each sample location. Table 9 summarizes overlying water qualities measured during the test. Laboratory bench sheets, water quality data, detailed summaries of survival, dry weights and associated statistical support data are included in Appendix A.

Table 5. Summary of Significant Endpoints. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Field ID	ESI Code	Sample Number	survival	dry wt	dry biomass
OUI-SE-LVR609-110822	21319-001	001			
OUI-SE-LVR607-110822	21319-002	002	Reach 3	Yes	No
OUI-SE-LVR608-110823	21319-003	003			
OUI-SE-LVR604-110824	21319-004	004			
OUI-SE-LVR605-110824	21319-005	005	Reach 2	Yes / No	No
OUI-SE-LVR606-110824	21319-006	006			
OUI-SE-LVR602-110825	21319-010	010	Reach 1	No	Yes
OUI-SE-LVR603-110825	21319-011	011			

4.0 REFERENCES

- APHA. 1998. *Standard Methods for the Examination of Water and Wastewater*, 20th Edition. Washington D.C.
- ASTM. 2010. Annual Book of ASTM Standards. Volume 11.06. *Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Freshwater Invertebrates*. E 1706-05. ASTM, Philadelphia.
- US EPA. 2000. *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates*. Second Edition. EPA/600-R-99/064. Method 100.5.

Table 6. Survival Summary and Statistical Analysis. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Day 10 Survival Summary - Component Summary								
Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV	
Laboratory Control	21319-000	000	8	87.50%	70.0%	100.0%	13.31%	
OUI-SE-LVR610-110823	21319-007	007	Reach 4	8	96.25%	90.0%	100.0%	5.38%
OUI-SE-LVR611-110823	21319-008	008	Reach 4	8	31.25%	0.0%	80.0%	112.70%
OUI-SE-LVR612-110823	21319-009	009	Reach 4	8	91.25%	80.0%	100.0%	9.15%
OUI-SE-LVR609-110822	21319-001	001	Reach 3	8	57.50%	0.0%	100.0%	78.74%
OUI-SE-LVR607-110822	21319-002	002	Reach 3	8	92.50%	70.0%	100.0%	11.19%
OUI-SE-LVR608-110823	21319-003	003	Reach 3	8	86.25%	20.0%	100.0%	31.56%
OUI-SE-LVR604-110824	21319-004	004	Reach 2	8	97.50%	90.0%	100.0%	4.75%
OUI-SE-LVR605-110824	21319-005	005	Reach 2	8	95.00%	80.0%	100.0%	7.96%
OUI-SE-LVR606-110824	21319-006	006	Reach 2	8	93.75%	70.0%	100.0%	11.31%
OUI-SE-LVR602-110825	21319-010	010	Reach 1	8	72.50%	0.0%	100.0%	58.40%
OUI-SE-LVR603-110825	21319-011	011	Reach 1	8	75.00%	0.0%	100.0%	54.74%

Day 10 Survival Summary - Reach Summary								
Field ID	ESI Code	Sample Number	Mean	Minimum	Maximum	CV	Reject Null	
OUI-SE-LVR610-110823	21319-007	007						
OUI-SE-LVR611-110823	21319-008	008	Reach 4	95.42%	70%	100%	8.16%	-
OUI-SE-LVR612-110823	21319-009	009						
OUI-SE-LVR609-110822	21319-001	001						
OUI-SE-LVR607-110822	21319-002	002	Reach 3	72.92%	0%	100%	49.77%	Yes
OUI-SE-LVR608-110823	21319-003	003						
OUI-SE-LVR604-110824	21319-004	004						
OUI-SE-LVR605-110824	21319-005	005	Reach 2	78.75%	0%	100%	42.58%	Yes / No
OUI-SE-LVR606-110824	21319-006	006						
OUI-SE-LVR602-110825	21319-010	010						
OUI-SE-LVR603-110825	21319-011	011	Reach 1	73.75%	0%	100%	54.66%	No

Table 7. Ash Free Dry Weight Summary and Statistical Analysis. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Ash Free Dry Weight Summary - Component Summary

Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	21319-000	000	8	3.175	1.164	3.975	28.74%
OUI-SE-LVR610-110823	21319-007	007	Reach 4	8	1.773	1.246	2.480
OUI-SE-LVR611-110823	21319-008	008	Reach 4	8	0.598	0.345	36.60%
OUI-SE-LVR612-110823	21319-009	009	Reach 4	8	1.750	0.953	2.514
OUI-SE-LVR609-110822	21319-001	001	Reach 3	8	0.917	0.030	1.565
OUI-SE-LVR607-110822	21319-002	002	Reach 3	8	1.364	0.984	1.761
OUI-SE-LVR608-110823	21319-003	003	Reach 3	8	1.608	0.998	2.062
OUI-SE-LVR604-110824	21319-004	004	Reach 2	8	1.510	0.845	2.662
OUI-SE-LVR605-110824	21319-005	005	Reach 2	8	1.630	0.857	2.826
OUI-SE-LVR606-110824	21319-006	006	Reach 2	8	1.615	1.000	2.507
OUI-SE-LVR602-110825	21319-010	010	Reach 1	8	1.264	0.380	2.122
OUI-SE-LVR603-110825	21319-011	011	Reach 1	8	1.105	0.420	1.947

Ash Free Dry Weight Summary - Reach Summary

Field ID	ESI Code	Sample Number	Mean	Minimum	Maximum	CV	Reject Null
OUI-SE-LVR610-110823	21319-007	007					-
OUI-SE-LVR611-110823	21319-008	008	Reach 4	1.585	0.845	2.826	38.71%
OUI-SE-LVR612-110823	21319-009	009					
OUI-SE-LVR609-110822	21319-001	001					
OUI-SE-LVR607-110822	21319-002	002	Reach 3	1.529	0.345	2.514	41.70%
OUI-SE-LVR608-110823	21319-003	003					
OUI-SE-LVR604-110824	21319-004	004					
OUI-SE-LVR605-110824	21319-005	005	Reach 2	1.313	0.030	2.062	40.08%
OUI-SE-LVR606-110824	21319-006	006					
OUI-SE-LVR602-110825	21319-010	010					
OUI-SE-LVR603-110825	21319-011	011	Reach 1	1.185	0.380	2.122	45.51%
							Yes

Table 8. Ash Free Dry Biomass Summary and Statistical Analysis. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Ash Free Dry Biomass Summary - Component Summary							
Field ID	ESI Code	Sample Number	Reps	Mean	Minimum	Maximum	CV
Laboratory Control	21319-000	000	8	2.246	1.164	3.564	33.89%
OUI-SE-LVR610-110823	21319-007	007	Reach 4	8	1.672	1.246	2.354
OUI-SE-LVR611-110823	21319-008	008	Reach 4	8	0.389	0.204	0.596
OUI-SE-LVR612-110823	21319-009	009	Reach 4	8	1.620	0.762	2.514
OUI-SE-LVR609-110822	21319-001	001	Reach 3	8	0.830	0.003	1.565
OUI-SE-LVR607-110822	21319-002	002	Reach 3	8	1.265	0.886	1.761
OUI-SE-LVR608-110823	21319-003	003	Reach 3	8	1.391	0.326	2.062
OUI-SE-LVR604-110824	21319-004	004	Reach 2	8	1.453	0.845	2.396
OUI-SE-LVR605-110824	21319-005	005	Reach 2	8	1.531	0.857	2.577
OUI-SE-LVR606-110824	21319-006	006	Reach 2	8	1.507	1.000	2.507
OUI-SE-LVR602-110825	21319-010	010	Reach 1	8	0.984	0.038	1.747
OUI-SE-LVR603-110825	21319-011	011	Reach 1	8	1.039	0.084	1.947

Ash Free Dry Biomass Summary - Reach Summary							
Field ID	ESI Code	Sample Number	Mean	Minimum	Maximum	CV	Reject Null
OUI-SE-LVR610-110823	21319-007	007					
OUI-SE-LVR611-110823	21319-008	008	Reach 4	1.497	0.845	2.577	36.66%
OUI-SE-LVR612-110823	21319-009	009					
OUI-SE-LVR609-110822	21319-001	001					
OUI-SE-LVR607-110822	21319-002	002	Reach 3	1.395	0.204	2.514	47.78%
OUI-SE-LVR608-110823	21319-003	003					
OUI-SE-LVR604-110824	21319-004	004					
OUI-SE-LVR605-110824	21319-005	005	Reach 2	1.176	0.003	2.062	49.53%
OUI-SE-LVR606-110824	21319-006	006					
OUI-SE-LVR602-110825	21319-010	010					
OUI-SE-LVR603-110825	21319-011	011	Reach 1	1.011	0.038	1.947	55.69%

Table 9. Summary of Water Qualities. FC 1640 LVR Toxicity Test. *Chironomus dilutus* Sediment Assay. August 2011.

Field ID	ESI Code	Sample Number	Day	Conductivity		Alkalinity (mg/L)	Hardness (mg/L)	Ammonia (mg/L)
				y	(uS/cm)			
Laboratory Control	21319-000	000	0	215	55	57	57	<0.1
OUI-SE-LVR609-110822	21319-001	001	0	257	71	73	73	<0.1
OUI-SE-LVR607-110822	21319-002	002	0	218	51	55	55	<0.1
OUI-SE-LVR608-110823	21319-003	003	0	211	48	49	49	<0.1
OUI-SE-LVR604-110824	21319-004	004	0	207	47	54	54	<0.1
OUI-SE-LVR605-110824	21319-005	005	0	208	48	58	58	<0.1
OUI-SE-LVR606-110824	21319-006	006	0	206	47	57	57	<0.1
OUI-SE-LVR610-110823	21319-007	007	0	208	47	53	53	<0.1
OUI-SE-LVR611-110823	21319-008	008	0	231	63	62	62	<0.1
OUI-SE-LVR612-110823	21319-009	009	0	208	47	55	55	<0.1
OUI-SE-LVR602-110825	21319-010	010	0	208	48	52	52	<0.1
OUI-SE-LVR603-110825	21319-011	011	0	203	46	51	51	<0.1
Laboratory Control	21319-000	000	10	227	51	53	53	<0.1
OUI-SE-LVR609-110822	21319-001	001	10	276	80	76	76	<0.1
OUI-SE-LVR607-110822	21319-002	002	10	254	69	68	68	<0.1
OUI-SE-LVR608-110823	21319-003	003	10	241	57	62	62	<0.1
OUI-SE-LVR604-110824	21319-004	004	10	237	60	64	64	<0.1
OUI-SE-LVR605-110824	21319-005	005	10	239	59	62	62	<0.1
OUI-SE-LVR606-110824	21319-006	006	10	238	59	62	62	<0.1
OUI-SE-LVR610-110823	21319-007	007	10	238	61	60	60	<0.1
OUI-SE-LVR611-110823	21319-008	008	10	269	76	69	69	<0.1
OUI-SE-LVR612-110823	21319-009	009	10	243	61	62	62	<0.1
OUI-SE-LVR602-110825	21319-010	010	10	235	59	56	56	<0.1
OUI-SE-LVR603-110825	21319-011	011	10	240	58	59	59	<0.1

Comments

Additional water quality data are provided in Appendix A.

APPENDIX A: RAW DATA AND STATISTICAL SUPPORT

Contents	Number of Pages
<i>C. dilutus</i> 10-Day Sediment Toxicity Test	
Day 0 - 10 Daily Observation Record	1
CETIS Worksheet	2
YSI 556 MPS Sample Reading Order	1
Daily Water Quality Data Logger Output	3
Day 10 Organism Recovery Bench Sheets	3
Day 0 Start Dry Weight Bench Sheet	1
Day 10 Dry Weight Data Printout	2
CETIS Day 10 Component and Reach Summaries	5
CETIS Day 10 Survival Statistical Analysis	4
CETIS Day 10 Ash Free Dry Weight Statistical Analysis	3
CETIS Day 10 Ash Free Dry Biomass Statistical Analysis	3
Analytical Chemistry Data Summaries	
Overlying Water Alkalinity	1
Overlying Water Ammonia	1
Overlying Water Hardness	1
Temperature Profile - Data Logger	1
Organism History Record	1
Pre-Assay Monitoring Record	2
Sample Receipt Logs; Chain of Custody Records; Custody Seals	7
Total Appendix Pages	42

Chironomus dilutus
10 Day SEDIMENT ASSAY

Study: 21321		Client: Geosyntec Consultants		Project: FC 1640 LVR Toxicity Test
Day	Date	am Water Qualities & Renew	pm Renew & Feed	Notes
		Initial	Initial	
0	09/16/11	✓/✓ JTP	✓/✓ JTP	
1	09/17/11	✓/✓ SJ/BS	✓/✓ SJ/CS	
2	09/18/11	✓/✓ SJ	✓/✓ SJ/CS	
3	09/19/11	✓/✓ JTP	✓/✓ JTP	
4	09/20/11	✓/✓ JTP	✓/✓ JTP	
5	09/21/11	✓/✓ JTP	✓/✓ JTP/RAM	
6	09/22/11	✓/✓ DM	✓/✓ JTP	
7	09/23/11	✓/✓ JTP/RAM	✓/✓ JTP	
8	09/24	✓/✓ DM/CS	✓/✓ DM/CS	
9	09/25/11	✓/✓ JTP	✓/✓ DM	
10	09/26/11	RAM	-	

Alkalinity, Hardness & Ammonia collected		Day 0	Initial: RAM
		Day 10	Initial: RAM/BS
Notes: 23 °C	Feed 1 mL of 6 g/L Tetramin Flake Daily	Aerate if DO is below 2.5 mg/L	Two Volume Additions Twice a Day

CETIS Test Data Worksheet

Report Date:

31 Oct-11 12:35 (p 1 of 2)

Test Code:

09-4653-9154/21321Cd

Chironomus 10-d Survival and Growth Sediment Test**EnviroSystems, Inc.**

Start Date: 16 Sep-11 12:00 **Species:** Chironomus dilutus
End Date: 26 Sep-11 12:00 **Protocol:** EPA/600/R-99/064 (2000)
Sample Date: 31 Aug-11 12:00 **Material:** Freshwater Sediment

Sample Code: 21319-000
Sample Source: FC1640 LVR Toxicity Test
Sample Station: Laboratory Control

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Ashed Weight-mg	Pan Count	Mean Length-mm	TareWt
21319-007	1	1	10	9	234.69	214.85	8		
21319-003	1	2	10	10	235.31	215.2	10		
21319-008	1	3	10	0			0		
21319-010	1	4	10	0			0		
21319-002	1	5	10	7	223.69	213.07	7		
21319-011	1	6	10	10	237.02	217.55	10		
21319-001	1	7	10	0			0		
21319-005	1	8	10	8	236.67	214.06	8		
21319-009	1	9	10	9	236.43	214.51	9		
21319-006	1	10	10	9	237.47	216.34	9		
21319-000	1	11	10	8	239.38	212.9	7		
21319-004	1	12	10	9	238.4	214.44	9		
21319-011	2	13	10	10	226.62	213.55	10		
21319-008	2	14	10	0			0		
21319-009	2	15	10	10	241.32	216.18	10		
21319-003	2	16	10	10	237.05	216.43	10		
21319-007	2	17	10	10	239.82	216.28	10		
21319-004	2	18	10	10	229.19	214.22	10		
21319-002	2	19	11	11	236.83	217.46	11		
21319-005	2	20	10	10	242.13	216.36	10		
21319-010	2	21	10	10	234.23	216.76	10		
21319-006	2	22	10	10	240	214.93	10		
21319-001	2	23	10	9	226.03	213.44	9		
21319-000	2	24	10	9	249.05	213.41	9		
21319-000	3	25	10	7	232.27	212.93	6		
21319-001	3	26	10	10	228.4	213.52	10		
21319-009	3	27	10	10	231.86	215.9	10		
21319-006	3	28	10	10	231.81	215.59	10		
21319-002	3	29	10	9	226.74	213.83	9		
21319-011	3	30	10	0			0		
21319-003	3	31	10	9	230.13	214.21	9		
21319-004	3	32	10	10	226.94	213.3	10		
21319-005	3	33	10	9	226.92	215.28	9		
21319-008	3	34	10	0			0		
21319-007	3	35	10	10	232.05	215.52	10		
21319-010	3	36	10	10	222.7	214.21	4		
21319-001	4	37	10	1	211.21	211.18	1		
21319-004	4	38	10	10	227.76	214.28	10		
21319-000	4	39	10	10	222.98	211.34	10		
21319-005	4	40	10	10	236.21	216.65	10		
21319-010	4	41	10	10	228.36	216.07	10		
21319-011	4	42	10	8	218.34	213.23	8		
21319-003	4	43	10	10	230.6	212.74	10		
21319-009	4	44	10	9	227.54	214.87	9		
21319-007	4	45	10	10	232.07	216.58	10		
21319-002	4	46	10	10	227.83	213.81	10		
21319-008	4	47	10	0			0		

CETIS Test Data Worksheet
Report Date:

31 Oct-11 12:35 (p 2 of 2)

Test Code:

09-4653-9154/21321Cd

Sample Code	Rep	Pos	# Exposed	# Survived	Total Weight-mg	Ashed Weight-mg	Pan Count	Mean Length-mm	TareWt
21319-006	4	48	10	7	223.75	213.45	7		
21319-001	5	49	10	10	228.8	213.15	10		
21319-004	5	50	10	9	231.38	214.16	9		
21319-002	5	51	10	10	232.88	215.92	10		
21319-005	5	52	11	11	232.41	215.75	11		
21319-011	5	53	10	10	231.57	214.83	10		
21319-006	5	54	10	9	233.41	216.34	9		
21319-010	5	55	10	9	225.54	215.56	9		
21319-008	5	56	10	7	219.4	213.44	7		
21319-003	5	57	10	9	227.16	213.01	9		
21319-007	5	58	10	10	235.54	217.83	10		
21319-009	5	59	10	10	234.41	214.54	10		
21319-000	5	60	10	8	236.79	212.94	6		
21319-003	6	61	10	10	223.77	213.4	10		
21319-010	6	62	10	1	211.56	211.18	1		
21319-007	6	63	10	9	231.74	216.82	9		
21319-000	6	64	10	8	225.51	211.5	5		
21319-004	6	65	10	10	226.96	213.38	10		
21319-009	6	66	10	8	227.22	214.78	8		
21319-008	6	67	10	4	213.91	211.87	4		
21319-005	6	68	10	10	222.94	214.37	10		
21319-011	6	69	10	10	223.49	215.06	10		
21319-006	6	70	10	10	223.58	213.27	10		
21319-002	6	71	10	9	223.11	214.15	9		
21319-001	6	72	10	1	210.34	210.21	1		
21319-002	7	73	10	10	224.18	212.93	10		
21319-004	7	74	10	10	224.56	213.62	10		
21319-009	7	75	10	9	229.81	215.81	9		
21319-003	7	76	10	2	214.98	211.72	2		
21319-005	7	77	12	12	226.91	214.47	12		
21319-000	7	78	10	10	235.41	213.1	7		
21319-008	7	79	10	6	214.61	212.54	6		
21319-007	7	80	10	9	229.05	215.78	9		
21319-006	7	81	10	10	224.41	213.99	10		
21319-011	7	82	10	10	222.71	213.67	10		
21319-001	7	83	10	5	214.72	211.47	5		
21319-010	7	84	10	10	225.22	214.51	10		
21319-011	8	85	10	2	211.97	211.13	2		
21319-010	8	86	10	8	223.26	213.72	8		
21319-000	8	87	10	10	239.72	213.3	8		
21319-004	8	88	10	10	222.74	214.29	10		
21319-002	8	89	10	9	223.05	214.19	9		
21319-006	8	90	10	10	225.68	215.68	10		
21319-008	8	91	10	8	219.61	214.12	8		
21319-003	8	92	10	9	222.17	213.19	9		
21319-001	8	93	10	10	224.03	212.49	10		
21319-009	8	94	10	8	223.76	216.14	8		
21319-007	8	95	10	10	230.29	217.83	10		
21319-005	8	96	10	9	223.05	214.24	9		

YSI 556 MPS Sample Reading Order

Study: 21321

Client: Geosyntec Consultants

Project: FC 1640 LVR Toxicity Test

Reading Number	Field ID	Receipt Number	Sample Number
0	Laboratory Control	21319-000	000
1	OUI-SE-LVR609-110822	21319-001	001
2	OUI-SE-LVR607-110822	21319-002	002
3	OUI-SE-LVR608-110823	21319-003	003
4	OUI-SE-LVR604-110824	21319-004	004
5	OUI-SE-LVR605-110824	21319-005	005
6	OUI-SE-LVR606-110824	21319-006	006
7	OUI-SE-LVR610-110823	21319-007	007
8	OUI-SE-LVR611-110823	21319-008	008
9	OUI-SE-LVR612-110823	21319-009	009
10	OUI-SE-LVR602-110825	21319-010	010
11	OUI-SE-LVR603-110825	21319-011	011

STUDY: 21321
CLIENT: Geosyntec Consultants
PROJECT: FC 1640 LVR Toxicity Test
ASSAY: Chironomus dilutus Sediment Assay
TASK: Overlying Water Alkalinity Summary

	Temp	DO Conc	pH	SpCond	Salinity
Minimum:	20.30	5.69	6.28	164	0.08
Mean:	22.92	7.80		227	0.11
Maximum:	24.55	8.64	8.15	278	0.13

Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
Laboratory Control	000	0	09/16/11 08:48:25	20.45	7.89	7.67	215	0.10
OUI-SE-LVR609-110822	001	0	09/16/11 08:48:56	20.43	7.93	7.95	257	0.12
OUI-SE-LVR607-110822	002	0	09/16/11 08:49:19	20.43	8.24	8.02	218	0.10
OUI-SE-LVR608-110823	003	0	09/16/11 08:49:43	20.41	8.37	7.97	211	0.10
OUI-SE-LVR604-110824	004	0	09/16/11 08:50:06	20.42	8.35	7.94	207	0.10
OUI-SE-LVR605-110824	005	0	09/16/11 08:50:28	20.43	8.36	7.93	208	0.10
OUI-SE-LVR606-110824	006	0	09/16/11 08:50:50	20.41	8.36	7.93	206	0.10
OUI-SE-LVR610-110823	007	0	09/16/11 08:51:14	20.35	8.38	7.92	208	0.10
OUI-SE-LVR611-110823	008	0	09/16/11 08:51:38	20.30	8.32	8.08	231	0.11
OUI-SE-LVR612-110823	009	0	09/16/11 08:52:02	20.33	8.32	8.03	208	0.10
OUI-SE-LVR602-110825	010	0	09/16/11 08:52:24	20.35	8.41	7.97	208	0.10
OUI-SE-LVR603-110825	011	0	09/16/11 08:52:45	20.30	8.37	7.93	203	0.10
Laboratory Control	000	1	09/17/11 07:49:07	21.40	7.85	7.26	194	0.09
OUI-SE-LVR609-110822	001	1	09/17/11 07:50:00	21.48	8.35	7.93	226	0.11
OUI-SE-LVR607-110822	002	1	09/17/11 07:50:12	21.47	8.37	7.98	199	0.09
OUI-SE-LVR608-110823	003	1	09/17/11 07:50:26	21.48	8.48	7.92	190	0.09
OUI-SE-LVR604-110824	004	1	09/17/11 07:50:38	21.51	8.56	7.89	187	0.09
OUI-SE-LVR605-110824	005	1	09/17/11 07:50:54	21.52	8.63	7.83	188	0.09
OUI-SE-LVR606-110824	006	1	09/17/11 07:51:05	21.51	8.64	7.84	186	0.09
OUI-SE-LVR610-110823	007	1	09/17/11 07:51:18	21.52	8.64	7.83	188	0.09
OUI-SE-LVR611-110823	008	1	09/17/11 07:51:35	21.48	8.55	7.89	208	0.10
OUI-SE-LVR612-110823	009	1	09/17/11 07:51:47	21.48	8.39	7.95	194	0.09
OUI-SE-LVR602-110825	010	1	09/17/11 07:52:01	21.48	8.62	7.91	188	0.09
OUI-SE-LVR603-110825	011	1	09/17/11 07:52:22	21.40	8.54	7.77	185	0.09
Laboratory Control	000	2	09/18/11 07:54:20	21.83	6.58	6.28	175	0.08
OUI-SE-LVR609-110822	001	2	09/18/11 07:55:35	21.80	7.89	7.97	210	0.10
OUI-SE-LVR607-110822	002	2	09/18/11 07:55:49	21.80	7.97	8.04	185	0.09
OUI-SE-LVR608-110823	003	2	09/18/11 07:56:01	21.79	8.06	8.02	185	0.09
OUI-SE-LVR604-110824	004	2	09/18/11 07:56:15	21.81	8.18	7.99	181	0.09
OUI-SE-LVR605-110824	005	2	09/18/11 07:56:27	21.83	8.18	7.93	176	0.08
OUI-SE-LVR606-110824	006	2	09/18/11 07:56:42	21.84	8.22	7.92	164	0.08
OUI-SE-LVR610-110823	007	2	09/18/11 07:56:56	21.84	8.28	7.94	174	0.08
OUI-SE-LVR611-110823	008	2	09/18/11 07:57:08	21.83	8.24	7.95	198	0.09
OUI-SE-LVR612-110823	009	2	09/18/11 07:57:23	21.81	8.10	8.07	176	0.08
OUI-SE-LVR602-110825	010	2	09/18/11 07:57:34	21.80	8.19	8.03	177	0.08
OUI-SE-LVR603-110825	011	2	09/18/11 07:57:45	21.77	8.24	7.98	173	0.08
Laboratory Control	000	3	09/19/11 08:05:56	21.02	7.74	7.49	210	0.10
OUI-SE-LVR609-110822	001	3	09/19/11 08:06:47	21.03	8.41	8.03	267	0.13
OUI-SE-LVR607-110822	002	3	09/19/11 08:07:05	21.04	8.54	8.04	219	0.10
OUI-SE-LVR608-110823	003	3	09/19/11 08:07:26	21.04	8.62	7.99	218	0.10

Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
OUI-SE-LVR604-110824	004	3	09/19/11 08:07:46	21.05	8.62	7.95	209	0.10
OUI-SE-LVR605-110824	005	3	09/19/11 08:08:06	21.05	8.60	7.92	204	0.10
OUI-SE-LVR606-110824	006	3	09/19/11 08:08:26	21.06	8.59	7.95	216	0.10
OUI-SE-LVR610-110823	007	3	09/19/11 08:08:43	21.04	8.60	7.95	217	0.10
OUI-SE-LVR611-110823	008	3	09/19/11 08:09:03	21.05	8.52	8.08	250	0.12
OUI-SE-LVR612-110823	009	3	09/19/11 08:09:19	21.03	8.50	8.10	225	0.11
OUI-SE-LVR602-110825	010	3	09/19/11 08:09:37	20.97	8.60	8.04	199	0.09
OUI-SE-LVR603-110825	011	3	09/19/11 08:09:59	20.87	8.54	7.95	223	0.11
Laboratory Control	000	4	09/20/11 08:26:49	22.53	7.10	7.50	215	0.10
OUI-SE-LVR609-110822	001	4	09/20/11 08:27:36	22.51	7.77	8.05	270	0.13
OUI-SE-LVR607-110822	002	4	09/20/11 08:27:50	22.49	7.84	8.05	247	0.12
OUI-SE-LVR608-110823	003	4	09/20/11 08:28:17	22.50	8.09	8.02	229	0.11
OUI-SE-LVR604-110824	004	4	09/20/11 08:28:47	22.52	8.10	7.94	225	0.11
OUI-SE-LVR605-110824	005	4	09/20/11 08:29:03	22.49	8.16	7.96	231	0.11
OUI-SE-LVR606-110824	006	4	09/20/11 08:29:27	22.55	8.12	7.99	225	0.11
OUI-SE-LVR610-110823	007	4	09/20/11 08:29:56	22.53	8.15	7.98	224	0.11
OUI-SE-LVR611-110823	008	4	09/20/11 08:30:17	22.52	7.95	8.06	258	0.12
OUI-SE-LVR612-110823	009	4	09/20/11 08:30:35	22.51	7.97	8.05	236	0.11
OUI-SE-LVR602-110825	010	4	09/20/11 08:31:04	22.50	8.30	8.03	225	0.11
OUI-SE-LVR603-110825	011	4	09/20/11 08:31:22	22.47	8.04	7.91	204	0.10
Laboratory Control	000	5	09/21/11 08:25:04	22.95	6.75	7.47	212	0.10
OUI-SE-LVR609-110822	001	5	09/21/11 08:25:56	22.92	7.67	7.99	273	0.13
OUI-SE-LVR607-110822	002	5	09/21/11 08:26:12	22.91	7.79	8.01	255	0.12
OUI-SE-LVR608-110823	003	5	09/21/11 08:26:34	22.92	7.88	8.00	232	0.11
OUI-SE-LVR604-110824	004	5	09/21/11 08:26:56	22.95	7.88	7.95	227	0.11
OUI-SE-LVR605-110824	005	5	09/21/11 08:27:18	22.91	7.89	7.94	222	0.10
OUI-SE-LVR606-110824	006	5	09/21/11 08:27:38	22.93	7.90	7.93	216	0.10
OUI-SE-LVR610-110823	007	5	09/21/11 08:28:01	22.92	7.94	7.92	228	0.11
OUI-SE-LVR611-110823	008	5	09/21/11 08:28:28	22.90	7.77	8.03	258	0.12
OUI-SE-LVR612-110823	009	5	09/21/11 08:28:54	22.92	7.96	8.01	231	0.11
OUI-SE-LVR602-110825	010	5	09/21/11 08:29:17	22.92	8.05	7.97	225	0.11
OUI-SE-LVR603-110825	011	5	09/21/11 08:29:32	22.86	8.06	7.93	232	0.11
Laboratory Control	000	6	09/22/11 09:02:20	24.47	5.69	7.49	213	0.10
OUI-SE-LVR609-110822	001	6	09/22/11 09:03:35	24.44	7.34	8.03	268	0.13
OUI-SE-LVR607-110822	002	6	09/22/11 09:04:14	24.42	7.20	8.09	251	0.12
OUI-SE-LVR608-110823	003	6	09/22/11 09:04:39	24.46	7.37	8.09	219	0.10
OUI-SE-LVR604-110824	004	6	09/22/11 09:05:39	24.49	7.33	8.02	230	0.11
OUI-SE-LVR605-110824	005	6	09/22/11 09:06:00	24.44	7.32	8.04	229	0.11
OUI-SE-LVR606-110824	006	6	09/22/11 09:06:32	24.48	7.41	8.04	227	0.11
OUI-SE-LVR610-110823	007	6	09/22/11 09:07:14	24.45	6.70	7.90	233	0.11
OUI-SE-LVR611-110823	008	6	09/22/11 09:08:16	24.41	6.99	8.15	257	0.12
OUI-SE-LVR612-110823	009	6	09/22/11 09:08:50	24.41	7.45	8.12	235	0.11
OUI-SE-LVR602-110825	010	6	09/22/11 09:09:16	24.41	7.42	8.06	230	0.11
OUI-SE-LVR603-110825	011	6	09/22/11 09:09:55	24.36	6.96	7.90	231	0.11
Laboratory Control	000	7	09/23/11 09:45:08	24.44	5.85	7.28	217	0.10
OUI-SE-LVR609-110822	001	7	09/23/11 09:46:38	24.42	7.46	8.02	276	0.13
OUI-SE-LVR607-110822	002	7	09/23/11 09:47:00	24.41	7.55	8.02	258	0.12
OUI-SE-LVR608-110823	003	7	09/23/11 09:47:30	24.43	7.71	8.02	241	0.11
OUI-SE-LVR604-110824	004	7	09/23/11 09:48:03	24.47	7.67	7.94	238	0.11
OUI-SE-LVR605-110824	005	7	09/23/11 09:48:40	24.45	7.66	7.96	239	0.11

Field ID	Sample Number	Day	Date/Time M/D/Y	Temp C	DO Conc mg/L	pH SU	SpCond uS/cm	Salinity ppt
OUI-SE-LVR606-110824	006	7	09/23/11 09:49:13	24.48	7.76	7.95	235	0.11
OUI-SE-LVR610-110823	007	7	09/23/11 09:49:51	24.47	7.29	7.80	250	0.12
OUI-SE-LVR611-110823	008	7	09/23/11 09:50:51	24.42	7.51	8.06	265	0.13
OUI-SE-LVR612-110823	009	7	09/23/11 09:51:25	24.43	7.80	8.04	241	0.11
OUI-SE-LVR602-110825	010	7	09/23/11 09:51:59	24.41	7.78	7.99	235	0.11
OUI-SE-LVR603-110825	011	7	09/23/11 09:52:33	24.37	7.60	7.88	237	0.11
Laboratory Control	000	8	09/24/11 10:34:37	24.35	6.06	7.39	219	0.10
OUI-SE-LVR609-110822	001	8	09/24/11 10:35:57	24.39	7.52	8.06	278	0.13
OUI-SE-LVR607-110822	002	8	09/24/11 10:36:20	24.37	7.36	8.08	259	0.12
OUI-SE-LVR608-110823	003	8	09/24/11 10:37:07	24.39	7.55	8.07	243	0.11
OUI-SE-LVR604-110824	004	8	09/24/11 10:37:28	24.43	7.63	8.01	239	0.11
OUI-SE-LVR605-110824	005	8	09/24/11 10:37:56	24.38	7.59	8.02	239	0.11
OUI-SE-LVR606-110824	006	8	09/24/11 10:38:22	24.43	7.56	7.99	223	0.10
OUI-SE-LVR610-110823	007	8	09/24/11 10:38:54	24.39	7.47	7.89	243	0.11
OUI-SE-LVR611-110823	008	8	09/24/11 10:39:37	24.37	7.08	8.11	267	0.13
OUI-SE-LVR612-110823	009	8	09/24/11 10:40:04	24.35	7.43	8.12	241	0.11
OUI-SE-LVR602-110825	010	8	09/24/11 10:40:43	24.33	7.44	8.08	231	0.11
OUI-SE-LVR603-110825	011	8	09/24/11 10:41:33	24.29	7.18	7.97	235	0.11
Laboratory Control	000	9	09/25/11 08:18:42	24.41	6.65	7.53	216	0.10
OUI-SE-LVR609-110822	001	9	09/25/11 08:19:30	24.47	7.49	7.95	275	0.13
OUI-SE-LVR607-110822	002	9	09/25/11 08:19:51	24.47	7.66	7.98	257	0.12
OUI-SE-LVR608-110823	003	9	09/25/11 08:20:12	24.51	7.79	8.01	243	0.11
OUI-SE-LVR604-110824	004	9	09/25/11 08:20:37	24.55	7.84	7.96	239	0.11
OUI-SE-LVR605-110824	005	9	09/25/11 08:21:01	24.52	7.92	7.95	241	0.11
OUI-SE-LVR606-110824	006	9	09/25/11 08:21:19	24.53	7.83	7.92	239	0.11
OUI-SE-LVR610-110823	007	9	09/25/11 08:21:54	24.47	7.57	7.80	245	0.12
OUI-SE-LVR611-110823	008	9	09/25/11 08:22:30	24.40	7.69	8.00	270	0.13
OUI-SE-LVR612-110823	009	9	09/25/11 08:22:51	24.43	7.86	8.00	249	0.12
OUI-SE-LVR602-110825	010	9	09/25/11 08:23:07	24.42	7.97	7.99	244	0.11
OUI-SE-LVR603-110825	011	9	09/25/11 08:23:32	24.38	7.86	7.93	245	0.12
Laboratory Control	000	10	09/26/11 10:16:10	24.17	6.28	7.41	227	0.11
OUI-SE-LVR609-110822	001	10	09/26/11 10:17:30	24.23	7.46	8.09	276	0.13
OUI-SE-LVR607-110822	002	10	09/26/11 10:17:59	24.21	7.64	8.09	254	0.12
OUI-SE-LVR608-110823	003	10	09/26/11 10:18:26	24.25	7.78	8.11	241	0.11
OUI-SE-LVR604-110824	004	10	09/26/11 10:19:06	24.30	7.69	8.04	237	0.11
OUI-SE-LVR605-110824	005	10	09/26/11 10:19:36	24.24	7.48	7.93	239	0.11
OUI-SE-LVR606-110824	006	10	09/26/11 10:20:28	24.29	5.91	7.68	238	0.11
OUI-SE-LVR610-110823	007	10	09/26/11 10:21:06	24.29	6.12	7.66	238	0.11
OUI-SE-LVR611-110823	008	10	09/26/11 10:21:48	24.28	7.30	8.08	269	0.13
OUI-SE-LVR612-110823	009	10	09/26/11 10:22:26	24.29	7.80	8.13	243	0.11
OUI-SE-LVR602-110825	010	10	09/26/11 10:22:59	24.25	7.85	8.09	235	0.11
OUI-SE-LVR603-110825	011	10	09/26/11 10:23:38	24.19	7.50	7.95	240	0.11

Chironomus dilutus Day 10

STUDY: 21321

PROJECT: FC 1640 LVR Toxicity Test

DATE: 09/26/11

CLIENT: Geosyntec Consultants

Sample Code	Rep	Pos	Survived	Initials
21319-007	1	1	9	KHS
21319-003	1	2	9	CBS
21319-008	1	3	8	KHS
21319-010	1	4	0	CBS
21319-002	1	5	0	CBS
21319-011	1	6	10	CBS
21319-001	1	7	9 (8/1)	KHS
21319-005	1	8	7	CBS
21319-009	1	9	9	CBS
21319-006	1	10	0	CBS
21319-000	1	11	8 (7-1)	KTC
21319-004	1	12	0	CBS
21319-011	2	13	10	KHS
21319-008	2	14	10	CBS
21319-009	2	15	10	CBS
21319-003	2	16	10	CBS
21319-007	2	17	0	CBS
21319-004	2	18	9	KHS
21319-002	2	19	0	CBS
21319-005	2	20	11	RAM
21319-010	2	21	10	
21319-006	2	22	10	
21319-001	2	23	10	↓
21319-000	2	24	9	KHS
21319-000	3	25	7 (6/1)	KHS
21319-001	3	26	10	CBS
21319-009	3	27	10	CBS
21319-006	3	28	9	KHS
21319-002	3	29	0	CBS
21319-011	3	30	0	RAM
21319-003	3	31	10	RAM
21319-004	3	32	10	RAM
21319-005	3	33	9	KHS
21319-008	3	34	9	CBS
21319-007	3	35	10	KTC
21319-010	3	36	10	KHS
21319-001	4	37	10	KHS
21319-004	4	38	1	CBS
21319-000	4	39	10 (6/4)	KHS
21319-005	4	40	10-	CBS

Chironomus dilutus Day 10

STUDY: 21321

PROJECT: FC 1640 LVR Toxicity Test

DATE: 09/26/11

CLIENT: Geosyntec Consultants

Sample Code	Rep	Pos	Survived	Initials
21319-010	4	41	10	KHS
21319-011	4	42	8	KHS
21319-003	4	43	9	CHS
21319-009	4	44	7	CHS
21319-007	4	45	10	KHS
21319-002	4	46	0	CHS
21319-008	4	47	10	CHS
21319-006	4	48	10	KHS
21319-001	5	49	89 10	KHS
21319-004	5	50	10	CHS
21319-002	5	51	7	CHS
21319-005	5	52	18	CHS
21319-011	5	53	18	CHS
21319-006	5	54	9	CHS
21319-010	5	55	9	KHS
21319-008	5	56	11	CHS
21319-003	5	57	10	KHS
21319-007	5	58	9	RAM
21319-009	5	59	9	RAM
21319-000	5	60	8 (7/1)	KHS
21319-003	6	61	0 8	CHS
21319-010	6	62	1	KHS
21319-007	6	63	10	CHS
21319-000	6	64	8 (6/2)	KHS
21319-004	6	65	1	CHS
21319-009	6	66	10	CHS
21319-008	6	67	10	CHS
21319-005	6	68	9	KHS
21319-011	6	69	10	KHS
21319-006	6	70	10	CHS
21319-002	6	71	4	CHS
21319-001	6	72	9	CHS
21319-002	7	73	6	CHS
21319-004	7	74	5	KHS
21319-009	7	75	10	CHS
21319-003	7	76	9	CHS
21319-005	7	77	10	CHS
21319-000	7	78	10 (9-1)	KHS
21319-008	7	79	12	KHS
21319-007	7	80	10	KHS

Chironomus dilutus Day 10

STUDY: 21321

PROJECT: FC 1640 LVR Toxicity Test

DATE: 09/26/11

CLIENT: Geosyntec Consultants

Sample Code	Rep	Pos	Survived	Initials
21319-006	7	81	2	CHS
21319-011	7	82	10	CHS
21319-001	7	83	9	CHS
21319-010	7	84	10	CHS
21319-011	8	85	2	CHS
21319-010	8	86	8	CHS
21319-000	8	87	10-(8/2)	CHS
21319-004	8	88	10	CHS
21319-002	8	89	8	CHS
21319-006	8	90	9	CHS
21319-008	8	91	9	CHS
21319-003	8	92	8	CHS
21319-001	8	93	10	CHS
21319-009	8	94	10	CHS
21319-007	8	95	10	CHS
21319-005	8	96	9	CHS

***Chironomus dilutus* Sediment Evaluation**

STUDY: 21321

CLIENT: Geosyntec Consultants

PROJECT: FC 1640 LVR Toxicity Test

START DATE: 09/16/11

	REP	TARE WEIGHT (mg)	C. dilutus + FOIL (mg)	NET WEIGHT (mg)	# C. dilutus	MEAN DRY WEIGHT PER Individual (mg)
START ORGANISMS	A	207.8	*81 208.38	0.58	10	0.058
	B	208.8	*118 209.58	0.78	10	0.078
	C	207.4	*124 208.02	0.62	10	0.062
	D	208.9	*130 209.44	0.54	10	0.054
RECORDED BY:	JTP	DM	Overall Mean Dry Weight Per Individual: 0.063			
DATE:	09/20/11	09-24-11				

Organisms were preserved on 09/16/11 and retained for weight data analysis.
RAM

STUDY: 21321
 CLIENT: GeoSyntec
 PROJECT: FC 1640 LVR
 ASSAY: 10-day Acute Exposure
 SPECIES: C. dilutus
 TASK: Dry Weight Data - AccuSeries Balance Output File
 BALANCE: AccuSeries Model 225D
 Serial #: 17008376.00

Date/Init: Position #	09/28/11 KAS Total Wt (mg)	09/26/11 DM Tare Wt (mg)	09/29/11 RAM Ash Wt (mg)	Duplicates		
				Total Wt (mg)	Tare Wt (mg)	Ash Wt (mg)
-001	238.40	210.40	214.44			
-002	236.43	210.19	214.51			
-003	236.67	210.56	214.06			
-004		210.92				
-005		211.18				
-006	237.02	211.22	217.55			
-007	234.69	210.73	214.85			
-008	223.69	210.99	213.07			
-009	237.47	210.74	216.34			
-010	235.31	211.41	215.20			215.23
-011	239.38	210.75	212.90			
-012		210.24				
-013	226.62	210.81	213.55			
-014	242.13	210.97	216.36			
-015	240.00	210.69	214.93			
-016	241.32	209.99	216.18			
-017	229.19	210.88	214.22			
-018	226.03	210.92	213.44			
-019		210.74				
-020	236.83	210.88	217.46			
-021	234.23	211.28	216.76			
-022	237.05	211.16	216.43			
-023	239.82	210.93	216.28	239.82		
-024	249.05	211.01	213.41			
-025	232.27	210.55	212.93			
-026	232.05	210.93	215.52			
-027	231.81	210.43	215.59			
-028	230.13	210.75	214.21			214.22
-029		210.74				
-030		211.34				
-031	231.86	210.78	215.90			
-032	228.40	210.93	213.52	228.4		
-033	226.74	209.98	213.83			
-034	226.92	211.06	215.28			
-035	226.94	210.43	213.30			
-036	222.70	211.41	214.21			
-037	232.07	210.90	216.58			
-038	211.21	211.02	211.18			
-039	222.98	210.50	211.34			
-040	227.83	210.34	213.81			
-041	228.36	211.17	216.07			
-042	218.34	210.34	213.23	218.34		
-043	227.54	210.70	214.87			

-044	223.75	210.70	213.45	
-045	227.76	210.99	214.28	
-046		210.71		
-047	236.21	210.36	216.65	
-048	230.60	210.91	212.74	212.76
-049	235.54	210.88	217.83	
-050	228.80	210.80	213.15	
-051	219.40	210.12	213.44	
-052	232.88	210.51	215.92	
-053	231.57	210.69	214.83	
-054	227.16	210.67	213.01	
-055	225.54	211.06	215.56	
-056	232.41	210.52	215.75	
-057	234.41	211.13	214.54	
-058	231.38	210.65	214.16	
-059	233.41	210.51	216.34	
-060	236.79	211.46	212.94	
-061	227.22	210.41	214.78	227.22
-062	211.56	211.06	211.18	
-063	226.96	210.37	213.38	
-064	225.51	210.60	211.50	
-065	210.34	210.13	210.21	
-066	223.58	210.59	213.27	213.27
-067	222.94	210.54	214.37	
-068	223.11	211.30	214.15	
-069	223.49	210.92	215.06	
-070	223.77	210.94	213.40	
-071	213.91	210.63	211.87	
-072	231.74	211.03	216.82	
-073	214.61	211.10	212.54	214.61
-074	214.72	210.77	211.47	
-075	224.41	210.52	213.99	
-076	229.81	210.89	215.81	
-077	224.18	210.26	212.93	
-078	235.41	210.57	213.10	
-079	226.91	211.00	214.47	
-080	224.56	210.92	213.62	213.64
-081	214.98	210.95	211.72	214.98
-082	222.71	210.57	213.67	
-083	229.05	210.45	215.78	
-084	225.22	211.16	214.51	
-085	211.97	210.55	211.13	
-086	223.26	210.31	213.72	
-087	239.72	211.13	213.30	
-088	224.03	210.15	212.49	
-089	219.61	210.47	214.12	
-090	222.17	210.83	213.19	
-091	223.05	210.64	214.24	223.06
-092	223.76	211.46	216.14	216.15
-093	230.29	210.66	217.83	
-094	225.68	211.41	215.68	
-095	222.74	211.22	214.29	
-096	223.05	211.08	214.19	

CETIS Summary Report

Report Date:

29 Sep-11 22:07 (p 2 of 3)

Test Code:

21321Cd | 09-4653-9154

Chironomus 10-d Survival and Growth Sediment Test										EnviroSystems, Inc.
Mean AF Biomass-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
21319-000	8	2.246	1.962	2.53	1.164	3.564	0.2692	0.7613	33.89%	0.0%
21319-007	8	1.672	1.537	1.807	1.246	2.354	0.1282	0.3627	21.69%	25.56%
21319-008	4	0.389	0.3096	0.4684	0.204	0.596	0.1064	0.2128	54.69%	82.68%
21319-009	8	1.62	1.406	1.835	0.762	2.514	0.2032	0.5747	35.47%	27.86%
21319-001	7	0.8296	0.5714	1.088	0.003001	1.565	0.2613	0.6915	83.35%	63.07%
21319-002	8	1.265	1.139	1.39	0.886	1.761	0.1189	0.3363	26.59%	43.69%
21319-003	8	1.391	1.166	1.616	0.326	2.062	0.2127	0.6017	43.26%	38.08%
21319-004	8	1.453	1.281	1.625	0.845	2.396	0.1631	0.4614	31.75%	35.31%
21319-005	8	1.531	1.284	1.778	0.857	2.577	0.2339	0.6616	43.21%	31.84%
21319-006	8	1.507	1.29	1.723	1	2.507	0.2048	0.5791	38.44%	32.93%
21319-010	7	0.9837	0.7931	1.174	0.038	1.747	0.193	0.5106	51.9%	56.2%
21319-011	7	1.039	0.7953	1.282	0.084	1.947	0.2463	0.6515	62.73%	53.76%
Mean AF Weight-mg Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
21319-000	8	3.175	2.834	3.515	1.164	3.975	0.3226	0.9124	28.74%	0.0%
21319-007	8	1.773	1.613	1.933	1.246	2.48	0.1513	0.428	24.14%	44.15%
21319-008	4	0.5982	0.5164	0.6799	0.345	0.8514	0.1095	0.2189	36.6%	81.16%
21319-009	8	1.75	1.553	1.948	0.9525	2.514	0.1872	0.5295	30.25%	44.86%
21319-001	7	0.9166	0.675	1.158	0.03001	1.565	0.2445	0.647	70.59%	71.13%
21319-002	8	1.364	1.252	1.477	0.9844	1.761	0.1064	0.3011	22.07%	57.02%
21319-003	8	1.608	1.458	1.758	0.9978	2.062	0.1418	0.4011	24.94%	49.34%
21319-004	8	1.51	1.302	1.718	0.845	2.662	0.1971	0.5576	36.92%	52.43%
21319-005	8	1.63	1.35	1.91	0.857	2.826	0.2651	0.7497	45.99%	48.66%
21319-006	8	1.615	1.392	1.837	1	2.507	0.2105	0.5952	36.86%	49.14%
21319-010	7	1.264	1.059	1.47	0.38	2.122	0.2081	0.5507	43.55%	60.17%
21319-011	7	1.105	0.8964	1.313	0.42	1.947	0.211	0.5582	50.52%	65.2%
Proportion Survived Summary										
Sample Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
21319-000	8	0.875	0.8315	0.9185	0.7	1	0.04119	0.1165	13.31%	0.0%
21319-007	8	0.9625	0.9432	0.9818	0.9	1	0.0183	0.05175	5.38%	-10.0%
21319-008	8	0.3125	0.181	0.444	0	0.8	0.1246	0.3523	112.7%	64.29%
21319-009	8	0.9125	0.8813	0.9437	0.8	1	0.0295	0.08345	9.15%	-4.29%
21319-001	8	0.575	0.4059	0.7441	0	1	0.1601	0.4528	78.74%	34.29%
21319-002	8	0.925	0.8863	0.9637	0.7	1	0.0366	0.1035	11.19%	-5.71%
21319-003	8	0.8625	0.7608	0.9642	0.2	1	0.09625	0.2722	31.56%	1.43%
21319-004	8	0.975	0.9577	0.9923	0.9	1	0.01637	0.04629	4.75%	-11.43%
21319-005	8	0.95	0.9218	0.9782	0.8	1	0.02673	0.07559	7.96%	-8.57%
21319-006	8	0.9375	0.8979	0.9771	0.7	1	0.0375	0.1061	11.31%	-7.14%
21319-010	8	0.725	0.5669	0.8831	0	1	0.1497	0.4234	58.4%	17.14%
21319-011	8	0.75	0.5967	0.9033	0	1	0.1452	0.4106	54.74%	14.29%

CETIS Summary Report

Report Date:

29 Sep-11 22:07 (p 3 of 3)

Test Code:

21321Cd | 09-4653-9154

Chironomus 10-d Survival and Growth Sediment Test								EnviroSystems, Inc.
Mean AF Biomass-mg Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
21319-000	2.648	3.564	1.934	1.164	2.385	1.401	2.231	2.642
21319-007	1.984	2.354	1.653	1.549	1.771	1.492	1.327	1.246
21319-008					0.596	0.204	0.207	0.549
21319-009	2.192	2.514	1.596	1.267	1.987	1.244	1.4	0.762
21319-001		1.259	1.488	0.003001	1.565	0.013	0.325	1.154
21319-002	1.062	1.761	1.291	1.402	1.696	0.896	1.125	0.886
21319-003	2.011	2.062	1.592	1.786	1.415	1.037	0.326	0.898
21319-004	2.396	1.497	1.364	1.348	1.722	1.358	1.094	0.845
21319-005	2.261	2.577	1.164	1.956	1.515	0.857	1.037	0.881
21319-006	2.113	2.507	1.622	1.03	1.707	1.031	1.042	1
21319-010		1.747	0.849	1.229	0.998	0.038	1.071	0.954
21319-011	1.947	1.307		0.511	1.674	0.843	0.904	0.084
Mean AF Weight-mg Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
21319-000	3.783	3.96	3.223	1.164	3.975	2.802	3.187	3.302
21319-007	2.48	2.354	1.653	1.549	1.771	1.658	1.474	1.246
21319-008					0.8514	0.51	0.345	0.6863
21319-009	2.436	2.514	1.596	1.408	1.987	1.555	1.556	0.9525
21319-001		1.399	1.488	0.03001	1.565	0.13	0.65	1.154
21319-002	1.517	1.761	1.434	1.402	1.696	0.9956	1.125	0.9844
21319-003	2.011	2.062	1.769	1.786	1.572	1.037	1.63	0.9978
21319-004	2.662	1.497	1.364	1.348	1.913	1.358	1.094	0.845
21319-005	2.826	2.577	1.293	1.956	1.515	0.857	1.037	0.9789
21319-006	2.348	2.507	1.622	1.471	1.897	1.031	1.042	1
21319-010		1.747	2.122	1.229	1.109	0.38	1.071	1.192
21319-011	1.947	1.307		0.6388	1.674	0.843	0.904	0.42
Proportion Survived Detail								
Sample Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8
21319-000	0.8	0.9	0.7	1	0.8	0.8	1	1
21319-007	0.9	1	1	1	1	0.9	0.9	1
21319-008	0	0	0	0	0.7	0.4	0.6	0.8
21319-009	0.9	1	1	0.9	1	0.8	0.9	0.8
21319-001	0	0.9	1	0.1	1	0.1	0.5	1
21319-002	0.7	1	0.9	1	1	0.9	1	0.9
21319-003	1	1	0.9	1	0.9	1	0.2	0.9
21319-004	0.9	1	1	1	0.9	1	1	1
21319-005	0.8	1	0.9	1	1	1	1	0.9
21319-006	0.9	1	1	0.7	0.9	1	1	1
21319-010	0	1	1	1	0.9	0.1	1	0.8
21319-011	1	1	0	0.8	1	1	1	0.2

CETIS Summary Report

 Report Date: 27 Oct-11 17:39 (p 1 of 3)
 Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project	
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse	
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h			
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h			
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h			
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h			
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude	
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control			
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4			
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3			
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2			
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1			
Sample Code	vs	Sample Code	P-Value	Alpha	Decision	Analysis ID	Method
21319Reach 4		21319Reach 3	0.2900	0.05	Non-Significant Effect	20-0246-9622	Equal Variance t Two-Sample Test
		21319Reach 3	0.3845	0.05	Non-Significant Effect	18-4554-7942	Equal Variance t Two-Sample Test
		21319Reach 3	0.0027	0.05	Significant Effect	09-4542-2126	Wilcoxon Rank Sum Two-Sample Test
		21319Reach 2	0.0292	0.05	Significant Effect	17-9665-5946	Equal Variance t Two-Sample Test
		21319Reach 2	0.0552	0.05	Non-Significant Effect	02-1491-1628	Equal Variance t Two-Sample Test
		21319Reach 2	0.0391	0.05	Significant Effect	01-1444-7576	Wilcoxon Rank Sum Two-Sample Test
		21319Reach 2	0.0612	0.05	Non-Significant Effect	01-8773-2215	Wilcoxon Rank Sum Two-Sample Test
		21319Reach 1	0.0066	0.05	Significant Effect	11-9941-6309	Equal Variance t Two-Sample Test
		21319Reach 1	0.0251	0.05	Significant Effect	08-3710-1147	Equal Variance t Two-Sample Test
		21319Reach 1	0.1012	0.05	Non-Significant Effect	20-5793-9641	Wilcoxon Rank Sum Two-Sample Test
Test Acceptability							
Analysis ID	Endpoint	Attribute	Test Stat	TAC Limits	Overlap	Decision	
01-1444-7576	Proportion Survived	Control Resp	0.9542	0.7 - NL	Yes	Passes Acceptability Criteria	
01-8773-2215	Proportion Survived	Control Resp	0.9542	0.7 - NL	Yes	Passes Acceptability Criteria	
09-4542-2126	Proportion Survived	Control Resp	0.9542	0.7 - NL	Yes	Passes Acceptability Criteria	
20-5793-9641	Proportion Survived	Control Resp	0.9542	0.7 - NL	Yes	Passes Acceptability Criteria	

CETIS Summary Report

Report Date:

27 Oct-11 17:39 (p 2 of 3)

Test Code:

21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test										EnviroSystems, Inc.
Mean AF Biomass-mg Summary										
Conc-NA	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
21319-000	8	2.246	1.962	2.53	1.164	3.564	0.2692	0.7613	33.89%	0.0%
21319Reach 4	24	1.497	1.292	1.702	0.845	2.577	0.112	0.5488	36.66%	33.36%
21319Reach 3	20	1.395	1.146	1.644	0.204	2.514	0.149	0.6664	47.78%	37.91%
21319Reach 2	23	1.176	0.9587	1.394	0.003001	2.062	0.1215	0.5826	49.53%	47.63%
21319Reach 1	14	1.011	0.8009	1.221	0.038	1.947	0.1505	0.5631	55.69%	54.98%
Mean AF Weight-mg Summary										
Conc-NA	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
21319-000	8	3.175	2.834	3.515	1.164	3.975	0.3226	0.9124	28.74%	0.0%
21319Reach 4	24	1.585	1.356	1.814	0.845	2.826	0.1252	0.6136	38.71%	50.07%
21319Reach 3	20	1.529	1.291	1.767	0.345	2.514	0.1426	0.6376	41.7%	51.83%
21319Reach 2	23	1.313	1.116	1.509	0.03001	2.062	0.1097	0.5262	40.08%	58.64%
21319Reach 1	14	1.185	0.9833	1.386	0.38	2.122	0.1441	0.5391	45.51%	62.68%
Proportion Survived Summary										
Conc-NA	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
21319-000	8	0.875	0.8315	0.9185	0.7	1	0.04119	0.1165	13.31%	0.0%
21319Reach 4	24	0.9542	0.9251	0.9833	0.7	1	0.0159	0.0779	8.16%	-9.05%
21319Reach 3	24	0.7292	0.5936	0.8647	0	1	0.07408	0.3629	49.77%	16.67%
21319Reach 2	24	0.7875	0.6623	0.9127	0	1	0.06845	0.3353	42.58%	10.0%
21319Reach 1	16	0.7375	0.587	0.888	0	1	0.1008	0.4031	54.66%	15.71%

CETIS Summary Report

Report Date:

27 Oct-11 17:39 (p 3 of 3)

Test Code:

21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test										EnviroSystems, Inc.	
Mean AF Biomass-mg Detail											
Conc-NA	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
21319-000	2.648	3.564	1.934	1.164	2.385	1.401	2.231	2.642			
21319Reach 4	2.396	1.497	1.364	1.348	1.722	1.358	1.094	0.845	2.261	2.577	
	1.164	1.956	1.515	0.857	1.037	0.881	2.113	2.507	1.622	1.03	
	1.707	1.031	1.042	1							
21319Reach 3	1.984	2.354	1.653	1.549	1.771	1.492	1.327	1.246			
			0.596	0.204	0.207	0.549	2.192	2.514	1.596	1.267	
21319Reach 2	1.987	1.244	1.4	0.762							
		1.259	1.488	0.003001	1.565	0.013	0.325	1.154	1.062	1.761	
	1.291	1.402	1.696	0.896	1.125	0.886	2.011	2.062	1.592	1.786	
21319Reach 1	1.415	1.037	0.326	0.898							
		1.747	0.849	1.229	0.998	0.038	1.071	0.954	1.947	1.307	
		0.511	1.674	0.843	0.904	0.084					
Mean AF Weight-mg Detail											
Conc-NA	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
21319-000	3.783	3.96	3.223	1.164	3.975	2.802	3.187	3.302			
21319Reach 4	2.662	1.497	1.364	1.348	1.913	1.358	1.094	0.845	2.826	2.577	
	1.293	1.956	1.515	0.857	1.037	0.9789	2.348	2.507	1.622	1.471	
	1.897	1.031	1.042	1							
21319Reach 3	2.48	2.354	1.653	1.549	1.771	1.658	1.474	1.246			
			0.8514	0.51	0.345	0.6863	2.436	2.514	1.596	1.408	
21319Reach 2	1.987	1.555	1.556	0.9525							
		1.399	1.488	0.03001	1.565	0.13	0.65	1.154	1.517	1.761	
	1.434	1.402	1.696	0.9956	1.125	0.9844	2.011	2.062	1.769	1.786	
21319Reach 1	1.572	1.037	1.63	0.9978							
		1.747	2.122	1.229	1.109	0.38	1.071	1.192	1.947	1.307	
		0.6388	1.674	0.843	0.904	0.42					
Proportion Survived Detail											
Conc-NA	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	
21319-000	0.8	0.9	0.7	1	0.8	0.8	1	1			
21319Reach 4	0.9	1	1	1	0.9	1	1	1	0.8	1	
	0.9	1	1	1					1	0.7	
21319Reach 3	0.9	1	1	1	1	0.9	0.9	1	0	0	
	0	0	0.7	0.4	0.6	0.8	0.9	1	1	0.9	
21319Reach 2	1	0.8	0.9	0.8							
	0	0.9	1	0.1	1	0.1	0.5	1	0.7	1	
	0.9	1	1	0.9	1	0.9	1	1	0.9	1	
21319Reach 1	0.9	1	0.2	0.9							
	0	1	1	1	0.9	0.1	1	0.8	1	1	
	0	0.8	1	1	1	0.2					

CETIS Analytical Report

Report Date: 31 Oct-11 11:07 (p 1 of 4)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.
Analysis ID: 09-4542-2126	Endpoint: Proportion Survived			CETIS Version:	CETISv1.8.0	
Analyzed: 27 Oct-11 17:35	Analysis: Nonparametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h		
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control		
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4		
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3		
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2		
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1		
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD	
Angular (Corrected)	0	C > T	Not Run	Sample passes proportion survived endpoint	10.2%	
Wilcoxon Rank Sum Two-Sample Test						
Sample Code	vs	Sample Code	Test Stat	Critical	DF	Ties
21319Reach 4		21319Reach 3	2.781	1.645	46	4
						0.0027
						Significant Effect
ANOVA Table						
Source	Sum Squares		Mean Square	DF	F Stat	P-Value
Between	0.9910985		0.9910985	1	9.214	0.0039
Error	4.948088		0.1075671	46		
Total	5.939186		1.098666	47		
Distributional Tests						
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Variance Ratio F		14.87	3.042	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality		0.782	0.9345	<0.0001	Non-normal Distribution

CETIS Analytical Report

Report Date: 31 Oct-11 11:07 (p 2 of 4)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.
Analysis ID: 01-1444-7576	Endpoint: Proportion Survived			CETIS Version:	CETISv1.8.0	
Analyzed: 27 Oct-11 17:35	Analysis: Nonparametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h		
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control		
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4		
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3		
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2		
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1		
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD	
Angular (Corrected)	0	C > T	Not Run	Sample passes proportion survived endpoint	9.18%	
Wilcoxon Rank Sum Two-Sample Test						
Sample Code	vs	Sample Code	Test Stat	Critical	DF	Ties
21319Reach 4		21319Reach 2	1.761	1.645	46	3
						0.0391
						Significant Effect
ANOVA Table						
Source	Sum Squares		Mean Square	DF	F Stat	P-Value
Between	0.4962946		0.4962946	1	5.541	0.0229
Error	4.12019		0.08956935	46		
Total	4.616485		0.5858639	47		
Distributional Tests						
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Variance Ratio F		12.22	3.042	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality		0.7553	0.9345	<0.0001	Non-normal Distribution

CETIS Analytical Report

Report Date: 31 Oct-11 11:07 (p 3 of 4)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.
Analysis ID: 01-8773-2215	Endpoint: Proportion Survived			CETIS Version:	CETISv1.8.0	
Analyzed: 27 Oct-11 17:35	Analysis: Nonparametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h		
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control		
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4		
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3		
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2		
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1		
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD	
Angular (Corrected)	0	C > T	Not Run	Sample passes proportion survived endpoint	8.06%	
Wilcoxon Rank Sum Two-Sample Test						
Sample Code	vs	Sample Code	Test Stat	Critical	DF	Ties
21319Reach 4		21319Reach 2	1.545	1.645	45	3
						0.0612
						Non-Significant Effect
ANOVA Table						
Source	Sum Squares		Mean Square	DF	F Stat	P-Value
Between	0.3035544		0.3035544	1	4.38	0.0420
Error	3.118485		0.06929966	45		
Total	3.422039		0.3728541	46		
Distributional Tests						
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Variance Ratio F		9.412	3.065	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality		0.7195	0.9333	<0.0001	Non-normal Distribution

CETIS Analytical Report

Report Date: 31 Oct-11 11:07 (p 4 of 4)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.
Analysis ID: 20-5793-9641	Endpoint: Proportion Survived			CETIS Version:	CETISv1.8.0	
Analyzed: 27 Oct-11 17:35	Analysis: Nonparametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h		
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control		
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4		
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3		
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2		
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1		
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD	
Angular (Corrected)	0	C > T	Not Run	Sample passes proportion survived endpoint	11.5%	
Wilcoxon Rank Sum Two-Sample Test						
Sample Code	vs	Sample Code	Test Stat	Critical	DF	Ties
21319Reach 4		21319Reach 1	1.275	1.645	38	3
						0.1012
						Non-Significant Effect
ANOVA Table						
Source	Sum Squares		Mean Square	DF	F Stat	P-Value
Between	0.6603564		0.6603564	1	6.295	0.0165
Error	3.986054		0.1048962	38		
Total	4.646411		0.7652526	39		
Distributional Tests						
Attribute	Test		Test Stat	Critical	P-Value	Decision($\alpha:1\%$)
Variances	Variance Ratio F		18.07	3.3	<0.0001	Unequal Variances
Distribution	Shapiro-Wilk W Normality		0.7841	0.9236	<0.0001	Non-normal Distribution

CETIS Analytical Report

Report Date: 31 Oct-11 11:06 (p 1 of 3)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.		
Analysis ID: 18-4554-7942	Endpoint: Mean AF Weight-mg			CETIS Version:	CETISv1.8.0			
Analyzed: 27 Oct-11 17:35	Analysis: Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project		
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse		
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h				
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude		
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control				
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4				
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3				
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2				
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1				
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD			
Untransformed	0	C > T	Not Run	Sample passes mean af weight-mg endpoint	20.1%			
Equal Variance t Two-Sample Test								
Sample Code	vs	Sample Code	Test Stat	Critical	DF	MSD	P-Value	Decision(α :5%)
21319Reach 4		21319Reach 3	0.2956	1.682	42	0.318	0.3845	Non-Significant Effect
Auxiliary Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)			
Extreme Value		2.011	3.076	1.0000	No Outliers Detected			
ANOVA Table								
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)		
Between	0.03408705	0.03408705	1	0.08739	0.7690	Non-Significant Effect		
Error	16.38226	0.3900537	42					
Total	16.41634	0.4241408	43					
Distributional Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)			
Variances	Variance Ratio F	1.08	3.146	0.8516	Equal Variances			
Distribution	Shapiro-Wilk W Normality	0.9609	0.9295	0.1409	Normal Distribution			

CETIS Analytical Report

Report Date: 31 Oct-11 11:06 (p 2 of 3)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.		
Analysis ID: 02-1491-1628	Endpoint: Mean AF Weight-mg			CETIS Version:	CETISv1.8.0			
Analyzed: 27 Oct-11 17:35	Analysis: Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project		
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse		
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h				
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude		
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control				
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4				
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3				
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2				
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1				
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD			
Untransformed	0	C > T	Not Run	Sample passes mean af weight-mg endpoint	17.7%			
Equal Variance t Two-Sample Test								
Sample Code	vs	Sample Code	Test Stat	Critical	DF	MSD	P-Value	Decision(α :5%)
21319Reach 4		21319Reach 2	1.629	1.679	45	0.2806	0.0552	Non-Significant Effect
Auxiliary Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)			
Extreme Value		2.266	3.103	0.9533	No Outliers Detected			
ANOVA Table								
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)		
Between	0.86944	0.86944	1	2.653	0.1104	Non-Significant Effect		
Error	14.74958	0.3277685	45					
Total	15.61902	1.197209	46					
Distributional Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)			
Variances	Variance Ratio F	1.36	3.102	0.4743	Equal Variances			
Distribution	Shapiro-Wilk W Normality	0.9872	0.9333	0.8818	Normal Distribution			

CETIS Analytical Report

Report Date: 31 Oct-11 11:06 (p 3 of 3)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.
Analysis ID: 08-3710-1147	Endpoint: Mean AF Weight-mg			CETIS Version:	CETISv1.8.0	
Analyzed: 27 Oct-11 17:35	Analysis: Parametric-Two Sample			Official Results:	Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h		
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h		
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control		
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4		
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3		
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2		
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1		
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD	
Untransformed	0	C > T	Not Run	Sample passes mean af weight-mg endpoint	21.1%	
Equal Variance t Two-Sample Test						
Sample Code	vs	Sample Code	Test Stat	Critical	DF	MSD
21319Reach 4		21319Reach 1	2.025	1.688	36	0.3337
						0.0251
						Significant Effect
Auxiliary Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)	
Extreme Value		2.141	3.014	1.0000	No Outliers Detected	
ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)
Between	1.417186	1.417186	1	4.102	0.0503	Non-Significant Effect
Error	12.43668	0.3454633	36			
Total	13.85386	1.76265	37			
Distributional Tests						
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)	
Variances	Variance Ratio F	1.296	4.194	0.6401	Equal Variances	
Distribution	Shapiro-Wilk W Normality	0.9329	0.9202	0.0248	Normal Distribution	

CETIS Analytical Report

Report Date: 31 Oct-11 11:04 (p 1 of 3)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.		
Analysis ID: 20-0246-9622	Endpoint: Mean AF Biomass-mg			CETIS Version:	CETISv1.8.0			
Analyzed: 27 Oct-11 17:35	Analysis: Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project		
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse		
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h				
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude		
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control				
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4				
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3				
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2				
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1				
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD			
Untransformed	0	C > T	Not Run	Sample passes mean af biomass-mg endpoint	20.6%			
Equal Variance t Two-Sample Test								
Sample Code	vs	Sample Code	Test Stat	Critical	DF	MSD	P-Value	Decision(α :5%)
21319Reach 4		21319Reach 3	0.5576	1.682	42	0.308	0.2900	Non-Significant Effect
Auxiliary Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)			
Extreme Value		1.992	3.076	1.0000	No Outliers Detected			
ANOVA Table								
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)		
Between	0.1137221	0.1137221	1	0.3109	0.5801	Non-Significant Effect		
Error	15.36362	0.3658004	42					
Total	15.47734	0.4795224	43					
Distributional Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)			
Variances	Variance Ratio F	1.474	3.146	0.3726	Equal Variances			
Distribution	Shapiro-Wilk W Normality	0.975	0.9295	0.4495	Normal Distribution			

CETIS Analytical Report

Report Date: 31 Oct-11 11:05 (p 2 of 3)
 Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.			
Analysis ID:		17-9665-5946	Endpoint:		Mean AF Biomass-mg	CETIS Version:	CETISv1.8.0		
Analyzed:		27 Oct-11 17:35	Analysis:		Parametric-Two Sample	Official Results:		Yes	
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project			
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc. Ecological Risk Asse				
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h					
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h					
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h					
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h					
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude			
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control					
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4					
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3					
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2					
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1					
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result		PMSD			
Untransformed	0	C > T	Not Run	Sample passes mean af biomass-mg endpoint		18.5%			
Equal Variance t Two-Sample Test									
Sample Code	vs	Sample Code	Test Stat	Critical	DF	MSD	P-Value	Decision($\alpha:5\%$)	
21319Reach 4		21319Reach 2	1.943	1.679	45	0.2772	0.0292	Significant Effect	
Auxiliary Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:5\%$)				
Extreme Value		2.097	3.103	1.0000	No Outliers Detected				
ANOVA Table									
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision($\alpha:5\%$)			
Between	1.207073	1.207073	1	3.774	0.0583	Non-Significant Effect			
Error	14.3943	0.3198734	45						
Total	15.60138	1.526946	46						
Distributional Tests									
Attribute	Test	Test Stat	Critical	P-Value	Decision($\alpha:1\%$)				
Variances	Variance Ratio F	1.127	3.065	0.7768	Equal Variances				
Distribution	Shapiro-Wilk W Normality	0.9843	0.9333	0.7732	Normal Distribution				

CETIS Analytical Report

Report Date: 31 Oct-11 11:05 (p 3 of 3)
Test Code: 21319Cd | 14-7135-2716

Chironomus 10-d Survival and Growth Sediment Test						EnviroSystems, Inc.		
Analysis ID: 11-9941-6309	Endpoint: Mean AF Biomass-mg			CETIS Version:	CETISv1.8.0			
Analyzed: 27 Oct-11 17:35	Analysis: Parametric-Two Sample			Official Results:	Yes			
Sample Code	Sample ID	Sample Date	Receive Date	Sample Age	Client Name	Project		
21319-000	18-8566-3388	13 Sep-11 12:00	13 Sep-11 12:00	73h	GeoSyntec Consultants, Inc.	Ecological Risk Asse		
21319Reach 4	15-4421-3027	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 3	15-4840-6035	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 2	14-0239-1443	13 Sep-11 12:00	13 Sep-11 12:00	73h				
21319Reach 1	02-8617-5543	13 Sep-11 12:00	13 Sep-11 12:00	73h				
Sample Code	Material Type	Sample Source		Station Location	Latitude	Longitude		
21319-000	Freshwater Sediment	FC1640 LVR Toxicity Test		Laboratory Control				
21319Reach 4	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 4				
21319Reach 3	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 3				
21319Reach 2	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 2				
21319Reach 1	Freshwater Sediment	FC1640 LVR Toxicity Test		Reach 1				
Data Transform	Zeta	Alt Hyp	MC Trials	Test Result	PMSD			
Untransformed	0	C > T	Not Run	Sample passes mean af biomass-mg endpoint	21.0%			
Equal Variance t Two-Sample Test								
Sample Code	vs	Sample Code	Test Stat	Critical	DF	MSD	P-Value	Decision(α :5%)
21319Reach 4		21319Reach 1	2.607	1.688	36	0.3145	0.0066	Significant Effect
Auxiliary Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :5%)			
Extreme Value		1.977	3.014	1.0000	No Outliers Detected			
ANOVA Table								
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α :5%)		
Between	2.085531	2.085531	1	6.795	0.0132	Significant Effect		
Error	11.04854	0.3069039	36					
Total	13.13407	2.392434	37					
Distributional Tests								
Attribute	Test	Test Stat	Critical	P-Value	Decision(α :1%)			
Variances	Variance Ratio F	1.053	3.408	0.8814	Equal Variances			
Distribution	Shapiro-Wilk W Normality	0.959	0.9202	0.1766	Normal Distribution			

STUDY: 21321
CLIENT: Geosyntec Consultants
PROJECT: FC 1640 LVR Toxicity Test
ASSAY: Chironomus dilutus Sediment Assay
TASK: Overlying Water Alkalinity Summary
METHOD: EPA 310.2

Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
Laboratory Control	000	0	21321-100	Water	55	2	mg/L	09/16/11 1030	09/16/11 1640
OUI-SE-LVR609-110822	001	0	21321-101	Water	71	2	mg/L	09/16/11 1030	09/16/11 1642
OUI-SE-LVR607-110822	002	0	21321-102	Water	51	2	mg/L	09/16/11 1030	09/16/11 1643
OUI-SE-LVR608-110823	003	0	21321-103	Water	48	2	mg/L	09/16/11 1030	09/16/11 1644
OUI-SE-LVR604-110824	004	0	21321-104	Water	47	2	mg/L	09/16/11 1030	09/16/11 1646
OUI-SE-LVR605-110824	005	0	21321-105	Water	48	2	mg/L	09/16/11 1030	09/16/11 1647
OUI-SE-LVR606-110824	006	0	21321-106	Water	47	2	mg/L	09/16/11 1030	09/16/11 1648
OUI-SE-LVR610-110823	007	0	21321-107	Water	47	2	mg/L	09/16/11 1030	09/16/11 1358
OUI-SE-LVR611-110823	008	0	21321-108	Water	63	2	mg/L	09/16/11 1030	09/16/11 1359
OUI-SE-LVR612-110823	009	0	21321-109	Water	47	2	mg/L	09/16/11 1030	09/16/11 1400
OUI-SE-LVR602-110825	010	0	21321-110	Water	48	2	mg/L	09/16/11 1030	09/16/11 1402
OUI-SE-LVR603-110825	011	0	21321-111	Water	46	2	mg/L	09/16/11 1030	09/16/11 1403
Laboratory Control	000	10	21321-200	Water	51	2	mg/L	09/26/11 1130	09/26/11 1602
OUI-SE-LVR609-110822	001	10	21321-201	Water	80	2	mg/L	09/26/11 1130	09/26/11 1608
OUI-SE-LVR607-110822	002	10	21321-202	Water	69	2	mg/L	09/26/11 1130	09/26/11 1610
OUI-SE-LVR608-110823	003	10	21321-203	Water	57	2	mg/L	09/26/11 1130	09/26/11 1611
OUI-SE-LVR604-110824	004	10	21321-204	Water	60	2	mg/L	09/26/11 1130	09/26/11 1612
OUI-SE-LVR605-110824	005	10	21321-205	Water	59	2	mg/L	09/26/11 1130	09/26/11 1614
OUI-SE-LVR606-110824	006	10	21321-206	Water	59	2	mg/L	09/26/11 1130	09/26/11 1615
OUI-SE-LVR610-110823	007	10	21321-207	Water	61	2	mg/L	09/26/11 1130	09/26/11 1616
OUI-SE-LVR611-110823	008	10	21321-208	Water	76	2	mg/L	09/26/11 1130	09/26/11 1618
OUI-SE-LVR612-110823	009	10	21321-209	Water	61	2	mg/L	09/26/11 1130	09/26/11 1619
OUI-SE-LVR602-110825	010	10	21321-210	Water	59	2	mg/L	09/26/11 1130	09/26/11 1620
OUI-SE-LVR603-110825	011	10	21321-211	Water	58	2	mg/L	09/26/11 1130	09/26/11 1625

STUDY: 21321
CLIENT: Geosyntec Consultants
PROJECT: FC 1640 LVR Toxicity Test
ASSAY: Chironomus dilutus Sediment Assay
TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
Laboratory Control	000	0	21321-124	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1214
OUI-SE-LVR609-110822	001	0	21321-125	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1216
OUI-SE-LVR607-110822	002	0	21321-126	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1217
OUI-SE-LVR608-110823	003	0	21321-127	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1221
OUI-SE-LVR604-110824	004	0	21321-128	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1222
OUI-SE-LVR605-110824	005	0	21321-129	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1222
OUI-SE-LVR606-110824	006	0	21321-130	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1223
OUI-SE-LVR610-110823	007	0	21321-131	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1224
OUI-SE-LVR611-110823	008	0	21321-132	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1225
OUI-SE-LVR612-110823	009	0	21321-133	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1226
OUI-SE-LVR602-110825	010	0	21321-134	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1227
OUI-SE-LVR603-110825	011	0	21321-135	Water	ND	0.1	mg/L as N	09/16/11 1030	09/19/11 1227
Laboratory Control	000	10	21321-224	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1402
OUI-SE-LVR609-110822	001	10	21321-225	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1405
OUI-SE-LVR607-110822	002	10	21321-226	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1406
OUI-SE-LVR608-110823	003	10	21321-227	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1409
OUI-SE-LVR604-110824	004	10	21321-228	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1410
OUI-SE-LVR605-110824	005	10	21321-229	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1411
OUI-SE-LVR606-110824	006	10	21321-230	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1412
OUI-SE-LVR610-110823	007	10	21321-231	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1413
OUI-SE-LVR611-110823	008	10	21321-232	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1413
OUI-SE-LVR612-110823	009	10	21321-233	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1414
OUI-SE-LVR602-110825	010	10	21321-234	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1415
OUI-SE-LVR603-110825	011	10	21321-235	Water	ND	0.1	mg/L as N	09/26/11 1130	09/28/11 1416

STUDY: 21321
CLIENT: Geosyntec Consultants
PROJECT: FC 1640 LVR Toxicity Test
ASSAY: Chironomus dilutus Sediment Assay
TASK: Overlying Water Hardness Summary
METHOD: SW846 3rd Ed. 6020

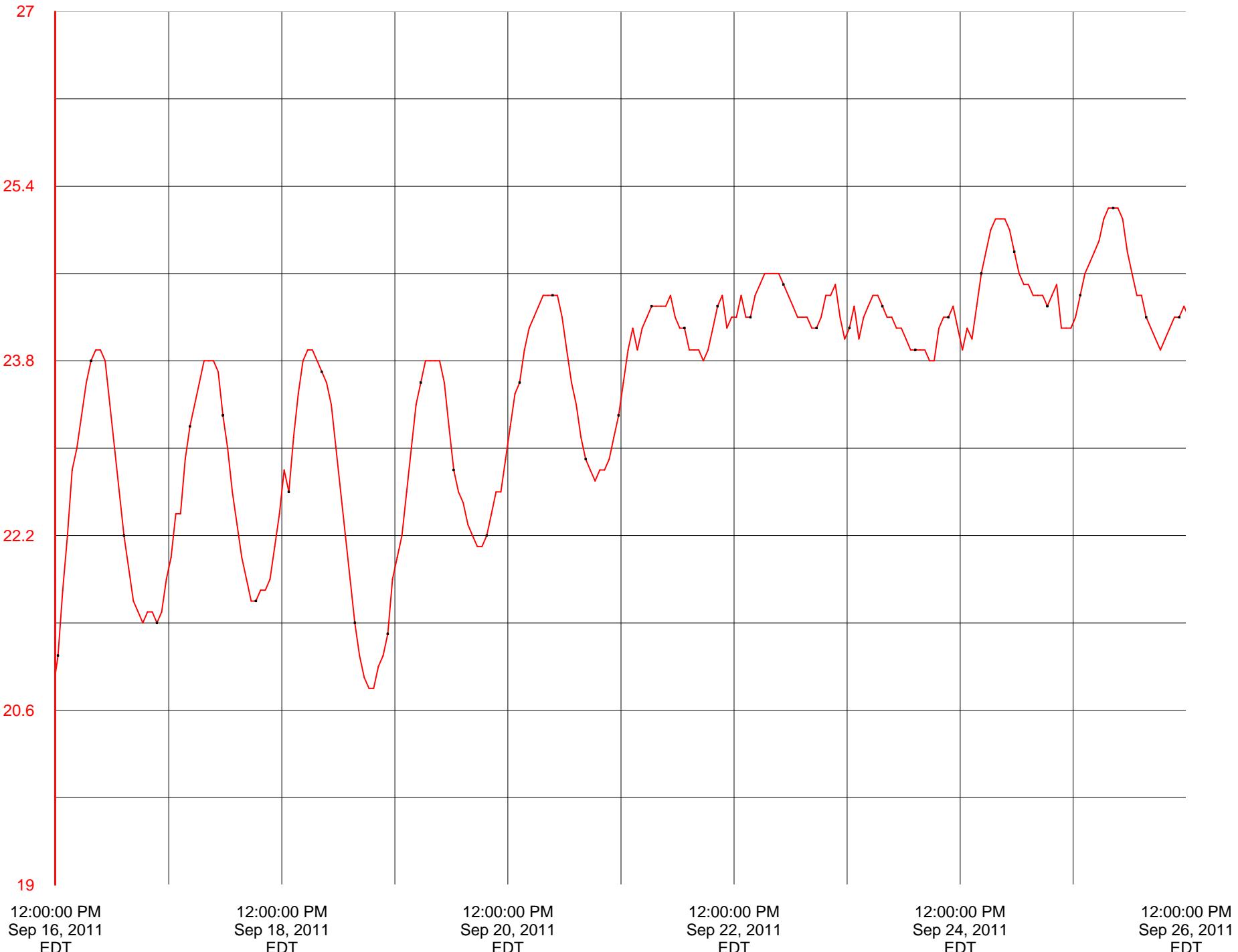
Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
Laboratory Control	000	0	21321-112	Water	57	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR609-110822	001	0	21321-113	Water	73	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR607-110822	002	0	21321-114	Water	55	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR608-110823	003	0	21321-115	Water	49	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR604-110824	004	0	21321-116	Water	54	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR605-110824	005	0	21321-117	Water	58	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR606-110824	006	0	21321-118	Water	57	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR610-110823	007	0	21321-119	Water	53	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR611-110823	008	0	21321-120	Water	62	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR612-110823	009	0	21321-121	Water	55	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR602-110825	010	0	21321-122	Water	52	0.4	mg/L	09/16/11 1030	09/17/11
OUI-SE-LVR603-110825	011	0	21321-123	Water	51	0.4	mg/L	09/16/11 1030	09/17/11
Laboratory Control	000	10	21321-212	Water	53	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR609-110822	001	10	21321-213	Water	76	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR607-110822	002	10	21321-214	Water	68	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR608-110823	003	10	21321-215	Water	62	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR604-110824	004	10	21321-216	Water	64	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR605-110824	005	10	21321-217	Water	62	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR606-110824	006	10	21321-218	Water	62	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR610-110823	007	10	21321-219	Water	60	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR611-110823	008	10	21321-220	Water	69	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR612-110823	009	10	21321-221	Water	62	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR602-110825	010	10	21321-222	Water	56	0.4	mg/L	09/26/11 1130	09/28/11
OUI-SE-LVR603-110825	011	10	21321-223	Water	59	0.4	mg/L	09/26/11 1130	09/28/11

°C

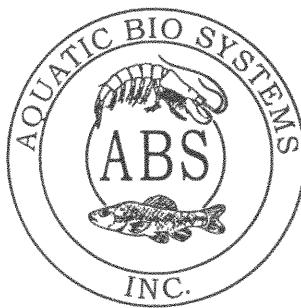
Temperature

Chironomus dilutus 10 Day Assay
Study 21321

Device	- MicroPoint1
Serial Number	- M35457
Device ID	- Temp

12:00:00 PM
Sep 16, 2011
EDT12:00:00 PM
Sep 18, 2011
EDT12:00:00 PM
Sep 20, 2011
EDT12:00:00 PM
Sep 22, 2011
EDT12:00:00 PM
Sep 24, 2011
EDT12:00:00 PM
Sep 26, 2011
EDT

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Rec 09/16/11

Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

ORGANISM HISTORY

DATE: 9/15/2011

SPECIES: *Chironomus dilutus* (formerly *C. tentans*)

AGE: Deposited 9/4/2011

LIFE STAGE: Second Instar 9/15/2011

HATCH DATE: Emergent date 9/28/2011

BEGAN FEEDING: Immediately

FOOD: *Selenastrum* sp., Flake slurry

Water Chemistry Record:

Current

Range

TEMPERATURE: 24°C 22-26°C

SALINITY/CONDUCTIVITY: -- --

TOTAL HARDNESS (as CaCO₃): 104 mg/l 98-190 mg/l

TOTAL ALKALINITY (as CaCO₃): 75 mg/l 50-110 mg/l

pH: 7.50 7.50-8.20

Comments:


Facility Supervisor

**Pre-Assay Monitoring
Chironomus dilutus
10 Day Sediment Evaluation**

Study: 21321

Client: Geosyntec
Consultants

Project: FC 1640 LVR Toxicity Test

Day	Date	Renewed		Renewed		Overlying Water Ammonia Checked
		am	Initial	pm	Initial	
0	08/31/11	-	-	-	-	-
1	09/01/11	-	-	✓	AM	-
2	09/02/11	✓	AM	✓	AM	✓
3	09/03/11	✓	CS	✓	AM	-
4	09/04/11	✓	DM	✓	DM	-
5	09/05/11	✓	AM	✓	AM	-
6	09/06/11	✓	AM	✓	AM	✓
7	09/07/11	✓	AM	✓	AM	-
8	09/08/11	✓	AM	✓	AM	-
9	09/09/11	✓		✓	RAM	-
10	09/10/11	✓	JTP	✓	CO	-
11	09/11/11	✓	JTP	✓	DM	-
12	9-12-11	✓	DM	✓	AM	-
13	9/13/11	✓	AM			
14	9/14/11	✓	JTP	✓	JTP	-
15	9-15-11	✓	DM	✓	JTP	

STUDY: 21321
CLIENT: Geosyntec Consultants
PROJECT: FC 1640 LVR Toxicity Test
ASSAY: Chironomus dilutus Sediment Assay
TASK: Overlying Water Ammonia Summary
METHOD: SM 4500-NH3 G

Field ID	Sample Number	Day	LAB ID	MATRIX	RESULT	QLIMIT	UNITS	SAMPLED	ANALYZED
Laboratory Control	000	09/02/2011	21319-062	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1614
OUI-SE-LVR609-110822	001	09/02/2011	21319-063	Water	0.41	0.1	mg/L as N	09/02/11 1500	09/07/11 1615
OUI-SE-LVR607-110822	002	09/02/2011	21319-064	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1616
OUI-SE-LVR608-110823	003	09/02/2011	21319-065	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1500
OUI-SE-LVR604-110824	004	09/02/2011	21319-066	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1502
OUI-SE-LVR605-110824	005	09/02/2011	21319-067	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1506
OUI-SE-LVR606-110824	006	09/02/2011	21319-068	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1507
OUI-SE-LVR610-110823	007	09/02/2011	21319-069	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1508
OUI-SE-LVR611-110823	008	09/02/2011	21319-070	Water	0.25	0.1	mg/L as N	09/02/11 1500	09/07/11 1508
OUI-SE-LVR612-110823	009	09/02/2011	21319-071	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1509
OUI-SE-LVR602-110825	010	09/02/2011	21319-072	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1510
OUI-SE-LVR603-110825	011	09/02/2011	21319-073	Water	ND	0.1	mg/L as N	09/02/11 1500	09/07/11 1511
Laboratory Control	000	09/06/2011	21319-136	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1541
OUI-SE-LVR609-110822	001	09/06/2011	21319-137	Water	0.18	0.1	mg/L as N	09/06/11 1100	09/07/11 1542
OUI-SE-LVR607-110822	002	09/06/2011	21319-138	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1543
OUI-SE-LVR608-110823	003	09/06/2011	21319-139	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1544
OUI-SE-LVR604-110824	004	09/06/2011	21319-140	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1545
OUI-SE-LVR605-110824	005	09/06/2011	21319-141	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1545
OUI-SE-LVR606-110824	006	09/06/2011	21319-142	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1546
OUI-SE-LVR610-110823	007	09/06/2011	21319-143	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1550
OUI-SE-LVR611-110823	008	09/06/2011	21319-144	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1553
OUI-SE-LVR612-110823	009	09/06/2011	21319-145	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1556
OUI-SE-LVR602-110825	010	09/06/2011	21319-146	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1556
OUI-SE-LVR603-110825	011	09/06/2011	21319-147	Water	ND	0.1	mg/L as N	09/06/11 1100	09/07/11 1557

Data Appendix Page 36 of 42

relinquished By: Meyher Schult Myhrin Date: 2/23/11 Time: 10:55 Received By: FED EX Date: Time:
 relinquished By: FED EX Date: 08/24/11 Time: 09:50 Received at Lab By: J. G. Gandy Date: 8/24/11 Time: 09:50
 Comments: Cooler #1 60C upon receipt.

CCAC Doc No.: 1/593



FedEx Copy

0200 Form No.

1 From Sender's FedEx Tracking Number
Date 8/23/11 Sender's FedEx Account Number
8762 6073 6453

2 Your Internal Billing Reference BFC1640-15
Recipient's Name Lab Recovery
Phone 609-920-3345

3 To Recipient's Name Envirosystems, Inc.
Company 1 Lafawche Rd
Address We cannot deliver to P.O. boxes or P.O. ZIP codes.
Dept/FloorSuite/Rm HOLD Weekday
REQUIRED FOR available for
Rec'd Sat/Sunday
Address use this line for the HOLD location address or for continuation of your shipping address.
City Hampton

4 Express Package Service *To next location.
NOTE: Service miles has changed. Please enter carefully.
1 FedEx First Overnight
Same business morning if delivery is selected.
For FedEx Standard Overnight, Saturday Delivery NOT available.
2 FedEx Priority Overnight
Next business morning. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
3 FedEx Standard Overnight
Next business afternoon. Saturday Delivery NOT available.
4 FedEx Express Saver
Third business day.
5 FedEx Saturday Delivery NOT available.

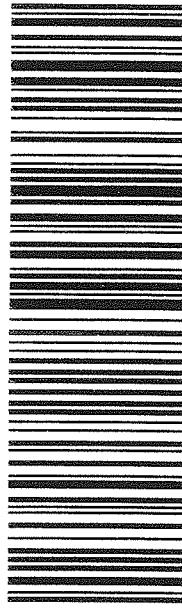
5 Packaging *Desired value limit/size.
60□ FedEx Envelope* 02□ FedEx Pak* 03□ FedEx Box 04□ FedEx Tube 01□ Other

6 Special Handling and Delivery Signature Options

- No Signature Required If no one is available at recipient's address, package may be left without obtaining signature or delivery. 34□
 Indirect Signature If no one is available at recipient's address, someone at neighboring address may sign for delivery. 35□
 Does this shipment contain dangerous goods? This box must be checked.
 Yes Shippers Declaration **06**□ Dry Ice
 As per attached Dry Ice
 Shipper's Declaration. Not required. **06**□ Dry Ice
 Dangerous goods (including dry ice) cannot be shipped in FedEx packaging
 or placed in a FedEx Express Drop Box. Cargo Aircraft Only
7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Check
 1 Sender Recipient Third Party Credit Card Cash/Check
 Acct. No. in Section 2 FedEx Acct. No. Credit Card No. Cash/Check
 FedEx Part No. Exp. Date
 0200

FedEx 2 of 3
MPS# 7957 5846 9166
0881
Mstr# 8762 6073 6453
03843

WED - 24 AUG A4
PRIORITY OVERNIGHT
NH - US MH



#46061 08/23 50FG1/EE77/FSF4



FedEx Co

0200
Form
ID No.

1 From	312311	Sender's FedEx Tracking Number	8762 6073 6453
Date	1/23/11	Account Number	1203 70008

Sender's Name	W. Meghan Schuck	Phone	813 3235-5236
Company	Geosyntec Consultants		
Address	134 N. Wauwatosa St., Suite 300		
City	Chicago	State	IL
	ZIP	60603	
Dept/Floor/Suite/Room			

2 Your Internal Billing Reference	31FC144015	Phone	630-3345
3 To	Labs Recycling		
Recipient's Name	Enviosystems, Inc		
Company	1 Lufanachie Rd		
Address	Dept/Floor/Suite/Room		
We cannot deliver to P.O. boxes or P.O. ZIP codes.			
Address	HOLD Saturday		
Recipient address			
REQUIRED. Available ONLY for			
FedEx Priority Overnight and			
FedEx 2-Day.			
Use this line for the HOLD location address or for continuation of your shipping address.			
City	NH	State	03813

4 Express Package Service	*To most locations. Enter Series letter line charged. Please select carrier.
Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight U.S.A. Series letter line charged.	
<input type="checkbox"/> NEW FedEx 2-Day A.M.	Second business morning. Saturday Delivery NOT available.
<input type="checkbox"/> FedEx 2-Day	Second business afternoon. Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
<input type="checkbox"/> FedEx Express Saver	Third business day. Saturday Delivery NOT available.
<input type="checkbox"/> FedEx Pak*	Delayed value limit \$500.
<input type="checkbox"/> FedEx Envelope*	02
<input type="checkbox"/> FedEx Box	03
<input type="checkbox"/> FedEx Tube	04
<input type="checkbox"/> FedEx Q	01

5 Packaging *Delayed value limit \$500.

6 Special Handling and Delivery Signature Options

No Signature Required	<input type="checkbox"/> Direct Signature	<input type="checkbox"/> Indirect Signature
Package may be left without obtaining a signature for delivery.	<input type="checkbox"/> Signature at recipient's address	<input type="checkbox"/> If no one is available at recipient's address, someone at a neighbor's address may sign for delivery. For residential deliveries only, <input type="checkbox"/> Yes
Does this shipment contain dangerous goods?	One box must be checked.	
<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> 04	<input type="checkbox"/> 05	<input type="checkbox"/> 06
Attached.	Shipper's Declaration. not required.	Dry Ice Dry Ice, g. UN 1845
Dangerous or Polluting or Flammable	Goods cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.	<input type="checkbox"/> Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender

Acct. No. in Section 2

Recipient

Third Party

Credit Card

Cash/Cr

R# 359 1 D
ST 2
9177
08.24

[Handwritten Signature]

SOPC-08/0130SP#
SOPC-08/0133SP#



CUSTODY SEAL

EnviroSystems, Inc.

PO Box 778, One Lafayette Road
Hampton, NH 03843-0778
(603) 926-3345
FAX (603) 926-3521

NAME: Megan Shultz Myle
DATE/TIME: 8/23/11 10:15

Cooler #1

CUSTODY SEAL

EnviroSystems, Inc.

PO Box 778, One Lafayette Road
Hampton, NH 03843-0778
(603) 926-3345
FAX (603) 926-3521

NAME: Megan Shultz Myle
DATE/TIME: 8/23/11 10:15

Cooler #2

CUSTODY SEAL

EnviroSystems, Inc.

PO Box 778, One Lafayette Road
Hampton, NH 03843-0778
(603) 926-3345
FAX (603) 926-3521

NAME: Megan Shultz Myle
DATE/TIME: 8/23/11 10:15

Cooler #3